THE IRON AGE

THURSDAY, JANUARY 1, 1891.

The Speed of War Ships.

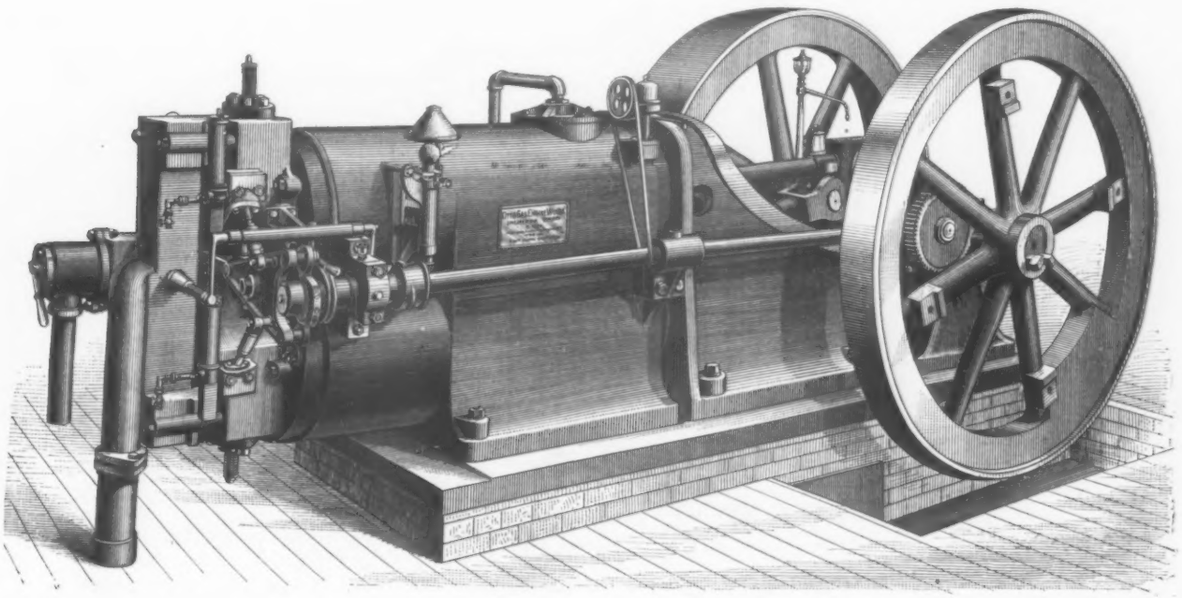
In point of speed, the fastest cruising ship of war in the navy is the San Francisco. The San Franciso, owing to the size of her machinery and heavier fittings, is perhaps able to maintain high speed for a longer period than can any of the new cruisers. Next in point of speed comes the Philadelphia, then in order the Baltimore, Newark, Charleston, Yorktown, Atlanta, Boston, Chicago, Dolphin and Petrel. The dynamite cruiser Vesuvius and torpedo boat Cushing, not being properly cruising ships, do not enter into the above comparison. The Cushing and Vesuvius are the fastest craft in the navy. The main interest, however, centers in the big cruisers of the San Franciso and Philadelphia type. All of the vessels of this class are 19-knot ships, with a possible speed for one hour's duration of over 20 knots. The average speed of the four latest cruisers for a mean of a four hours' continuous run is: San Francisco, 19.75 knots; Philadelphia, 19.678 knots; Baltimore, 19.57 knots, and Newark, 19.54 knots. The San Francisco made 20.06 knots during one hour of the four hours' run. The Baltimore made 20.2 knots during one hour of her four hours' ordeal.

All of the above vessels are fitted with twin screws, operated by triple-expansion engines. They are all approximately 5000-ton ships. Of the four ships, the fastest, the San Francisco, was built by the Union Iron Works of San Francisco. The remaining three were built by William Cramp & Sons of Philadelphia. A fifth cruiser, the Charleston, one of the first ships of the new navy, and a vessel fitted with compound engines, developed a maximum speed of 18.25 knots and an average speed of 17.75 knots. It would seem that so long as engine and boiler space continues to be cut down in the new cruisers the San Francisco, by virtue of her heavy machinery, will continue to head the navy list in point of speed. The Western built ship is unquestionably the most powerful steaming ship in the navy to-day. She is a source of pride, withal, to the Navy Department, and especially to the Bureau of Steam Engineering, inasmuch as her designs are more properly those of Commodore Melville than are the machinery designs of any other cruiser in the navy.

The Otto Gas Engine and Producer Gas.

The gradual restriction in the supply of natural gas and the general tendency toward gaseous fuel even in sections where the natural product is not found have stimulated a demand for all kinds of gas generators, but owing to the acknowledged economy and the continuity of the process, the apparatus making the ordinary so-called producer gas is likely to be the most commonly used where gas of low heating value can be used to advantage. Different designs of producers, each having their own characteristic advantages, are on the market already and used largely for pottery furnaces, burning of bone-black in sugar refineries, &c., as well as in the various iron and steel industries. A striking feature of economy with producer gas is the absence of chimneys, through which so much heat energy is lost, when, for instance, solid fuel is used under boilers for making steam; and in conjunction with gas engines this advantage of gas producers results in the most economical results in the production of heat for power purposes. The high efficiency of the gas engine contributes, of course, its share to the general result of the combined apparatus, but it is claimed that the best construction of steam boilers and boiler settings combined with triple expansion engines cannot equal the fuel consumption that has been recorded in several instances for large sized gas engines in conjunction with gas producers.

With the growth of gaseous fuel the use of gas direct in engine cylinders, made as it is needed in producers, the same as steam is made in boilers, cannot fail to become more general. It seems the most rational method for utilizing to the full extent the heat contained in the coal. In large plants of many horse-power the saving would be largest, and especially where power is consumed day and night, though the method is applicable with good commercial results to power plants of from 20 to 50 horse-power, owing to the waste of steam power in plants of this size being generally much larger than in that of large engines, the coal consumption reaching often as high as 6 to 12 pounds per horse-power per hour. The gas engine in conjunction with producer gas commonly consumes not more than 1¼ pounds, and sometimes as low as 1¼ pounds, of coal per hour. We presume that some of our readers are not entirely conversant with the details of the process referred to, and we therefore give on the next page a section of the apparatus as now constructed and in use at the Otto Gas Engine Works, Philadelphia.



OTTO GAS ENGINE OF 120 HORSE-POWER.

The gas is made in the producer on a continuous process by air and steam being passed through incandescent coal. From the generator it is taken to the scrubber for the purpose of cleaning and cooling, and is thence allowed to enter a small holder. From this the gas engine draws its supply, and in case the production of gas exceeds the consumption, the holder, filling and moving to its upper position, will strike a stop, by which the supply of steam and air is cut off from the producer, and the making of gas suspended until the drop of the holder causes it to be resumed.

The commercial results obtained by the combination of a gas producer with a gas engine have caused a marked increase in the size of the latter now offered by engine builders compared with those formerly constructed. The Otto Gas Engine Works now build engines of 120 horse-power, and several of these now under way in their shops are intended for use with producer gas. These engines are the largest that have ever been built here or abroad, and our accompanying engraving of one of them will give a general idea of their design. They are arranged with two cylinders, one on top of the other, so as to

make use of one crank shaft, to which the power is brought by connecting rods closely linked together below the crank pin. The igniting is done either by incandescent tube or by the electric spark, and all functions of admitting the charge of gas and air, opening exhaust valves, &c., depend on the gear shaft which runs parallel with the axis of the cylinder. The space occupied by the engine is about 16 feet in length and 6 feet 9 inches in width, and the usual speed is 160 revolutions. The gas consumption varies with the load on the engine, being regulated in an automatic manner by the governor and ranging in proportion from 1 to 8 between running idle and running under full load. The shipping weight of this size gas engine approximates 25,000 pounds.

The Nicaragua ship canal builders now have at Greytown ready for work a large amount of supplies, tools and machinery, consisting of steam boilers, rock drills, hoisting engines, railway appliances of all kinds, &c., also nearly all the materials for a first-class machine shop. The projectors have unabated confidence in the success of the work commercially no less than in an engineering point of view. The existing traffic across the Isthmus and around Cape Horn has increased, even without the canal, from 2,671,886 tons in 1879 to 4,507,044 tons in 1887. The same rate of increase until 1895, the earliest date which the canal can be opened, it is calculated, would make an annual traffic of 7,616,904 tons tributary to the canal, enough to net nearly 10 per cent. on a $120,000,000 investment. These are the figures of the canal company. Ten thousand miles will be saved by the canal in the trip from New York to San Francisco by water.

The recent letter of Acting-Secretary Nettleton, of the Treasury Department, regarding rebates as an element of dutiable value, is a distinct triumph for Hayden Edwards, our Consul-General at Berlin. Mr. Edwards has been trying for more than a year to have the principle asserted which is set forth in the letter of General Nettleton. The principle is that rebates allowed by the German Government on the raw materials entering into exported goods shall be estimated as a part of the dutiable value of the goods upon entry in this country. In other words, Mr. Edwards has refused to deduct the amount of the rebates from the market value of the goods when the invoices were presented to him for certification, but has insisted that the goods should be appraised at their full value in the home market.

Drawing Crucible Steel Wire.

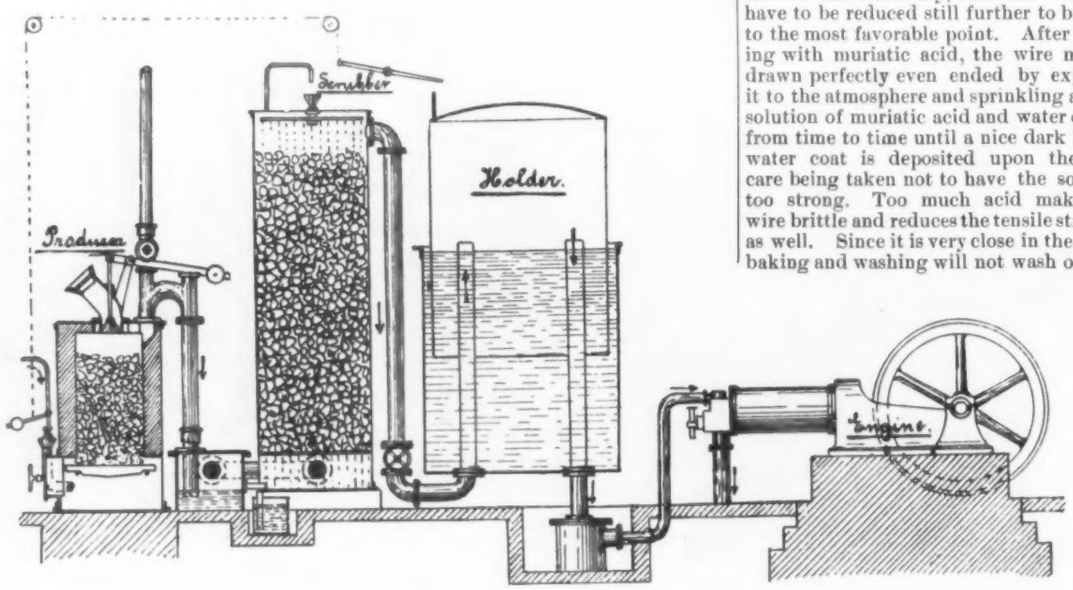
BY G. P. CLAPP, SUPERINTENDENT CALIFORNIA WIRE MILL, SAN FRANCISCO, CAL.

The treatment in drawing crucible steel wire to suit the requirements of the Pacific Coast cable roads is so imperfectly understood that a few remarks on this subject will no doubt be interesting to some of your numerous readers. The best grades of English crucible steel stand a uniform tensile strain of 200,000 pounds to the square inch, while American drawn wire will stand about 185,000 pounds. Firms in this country have imported the same grade of rods used by English makers, and still the wire produced is much inferior. The secret lies in the treatment of the rods and wire in its various stages. English makers have a secret process of tempering which is only partially known in this country.

Crucible, as well as other grades of steel rods, can only be reduced to a certain extent before the torsional qualities are partially or wholly destroyed. The tensile strength is increased and the twisting properties are decreased in proportion in all cases. Annealing steel wire destroys the tensile strength, which can only be brought back again at the expense of the torsional qualities required, unless the wire is tempered by lead and oil, or by some other process. From careful investigation there is no doubt that crucible steel rods suitable for tempering in lead, oil, water, or by any other suitable means, can be brought to a point where the greatest possible requirements are attained. This can be done by running the wire through hot lead and an oil bath kept at a known temperature, and reeling it at a certain speed. A perfect knowledge of the sizes of wire to be treated to produce other sizes that will stand all tests required must be acquired.

There is no known process of drawing crucible steel wire by slow or quick running blocks, or by light or heavy drafts, that will produce wire from the rods as it comes from the rolls to stand the tensile and torsional tests required for cable road wire. Every reduction in size, by drawing, increases the tensile strength and reduces the twisting qualities. When wire with less tensile strength and more torsional qualities than required is reduced to a certain size the two required elements will be brought together. To get the best possible results, the rod must be drawn to a certain size, then treated by some means that will give it the required consistency to draw down to the size required, and this can only be done by thoroughly understanding the process of treating at the proper size, and then drawing to a certain other size, then testing to ascertain if requirements are correct.

If No. 14 is wanted, the proper size of wire to start with must be known and treated, then drawn to size. If upon testing at No. 13 the wire is found to have the proper qualities, another reduction will not do, as this will reduce the necessary torsions; the only remedy is to take a size smaller wire to start with or make it a trifle softer. If the wire is found at No. 14 with too little tensile strength and more resistance to torsion than necessary, then the wire will have to be reduced still further to bring it to the most favorable point. After cleaning with muriatic acid, the wire may be drawn perfectly even ended by exposing it to the atmosphere and sprinkling a weak solution of muriatic acid and water over it from time to time until a nice dark brown water coat is deposited upon the wire, care being taken not to have the solution too strong. Too much acid makes the wire brittle and reduces the tensile strength as well. Since it is very close in the grain, baking and washing will not wash out and evaporate the acid, as in the case of other grades of soft steel and iron. Wire that does not stand the required tests when taken direct from the blocks often comes up to the standard by being exposed to the air two or three weeks. Perfectly dry hard soap must be applied to the wire while drawing, otherwise the wire scrapes and ruins the die plate.



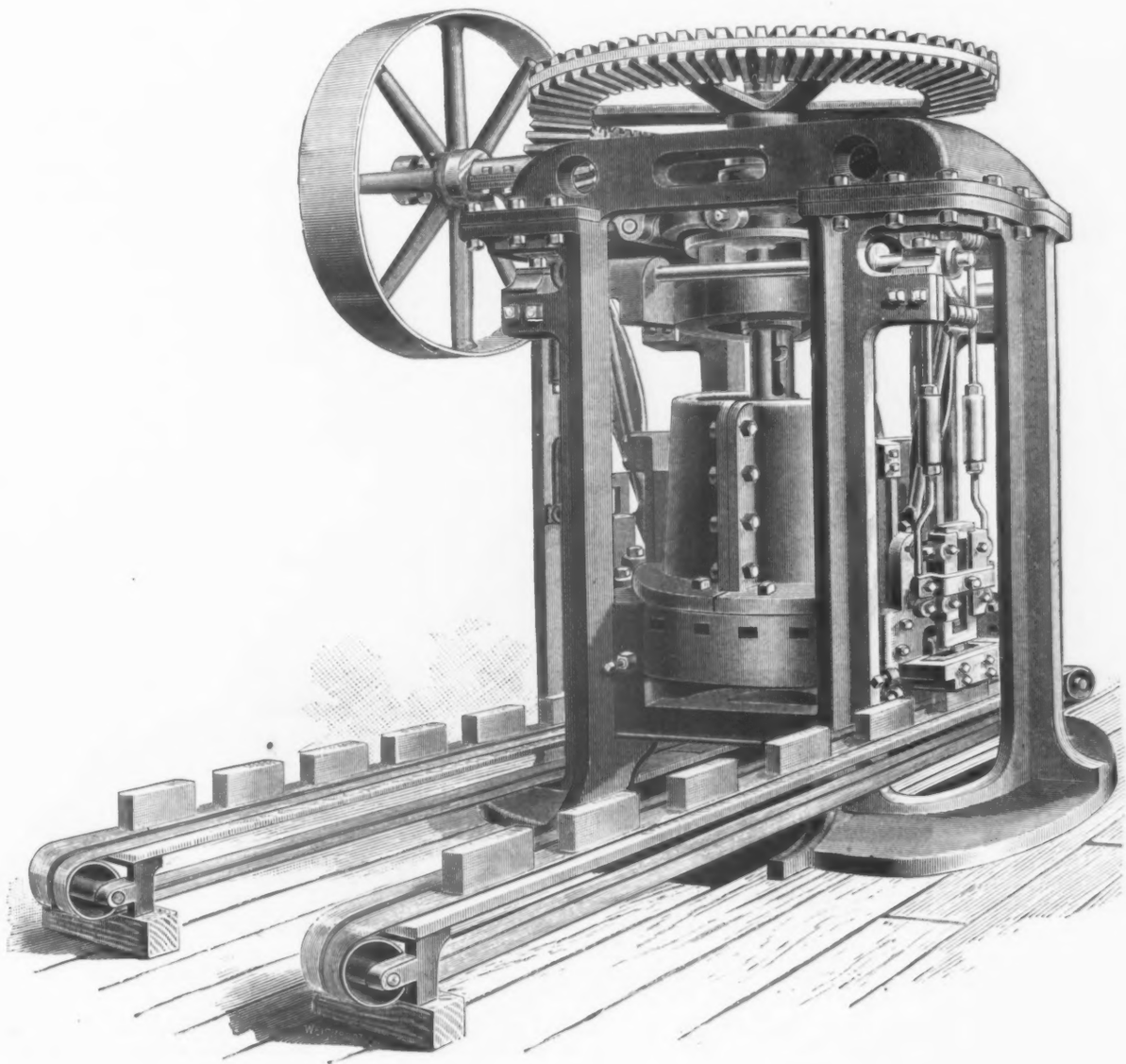
PRODUCER GAS PLANT AT THE OTTO GAS ENGINE WORKS.

The New York Biscuit Company have arranged for the erection of the largest buildings in the city on Tenth avenue, near Sixteenth street. The buildings will be erected on four sides of a hollow square, which will be 206½ by 427 feet in dimensions. The factory will contain 40 patent revolving ovens of enormous capacity, and will employ in the various branches of the business nearly 10,000 men. In the center of the block will be an engine room containing enormous Worthington and Corliss engines and a most perfect electric plant for lighting the factory. Outside of the engine room will be a furnace and boiler room containing the largest bank of steam boilers in the United States, and surmounted by a smoke stack 125 feet in hight. The cost, exclusive of ground, is estimated at $2,000,000.

Brick Machine.

This machine is especially designed to work stiff clay as it comes from the bank. The clay may be delivered by a carrier discharging it into a very heavy cast iron cylinder surrounding the vertical shaft which carries the arms that pug the clay and also gives motion to all other working parts. The pugging cylinder is differential in diameter, the larger diameter being beneath where the final pugging is done and the clay delivered to the molds. The machine is practically double, having upon each side a mold, a pressing plunger and a discharging plunger. While the brick is being pressed on one side a finished brick is being discharged upon the other, giving two complete bricks at each revolution. Thus, at the moderate speed of 17 revolutions per minute the product per hour would be 2040 bricks, which are claimed to be so perfect and so dense that no pallets are required, but the brick can be trucked directly to the hacks or dryer.

The brick is pressed on edge and delivered to the off bearing belts directly beneath the molds. The brick leaves the press with smooth, flat sides, square edges and corners, and requires no trimming, the result being that the brick will lay close and present a smooth and finished appearance. The machine is thoroughly self contained; it does all the work and no side machinery is necessary. The main dimensions are: Driving pulley, 60 inches diameter, 12½ inch face; shaft, 5 inches diameter; bevel pinion, 12 inches in diameter on the pitch line, and made of cast iron with machine dressed teeth; the crown wheel is made with hard maple teeth and is 72 inches in diameter. The machine weighs 23,000 pounds, and requires from 20 to 25 horse-power to drive it. It is made by the Straub Machinery Company of Cincinnati, Ohio.



THE GRANT LEVIATHAN BRICK MACHINE.

The Alabama Industrial and Scientific Society was organized at the University of Alabama, on Thursday, December 11, 1890, with 70 members. The objects of the society are the promotion of the industries of the State and the furtherance of scientific investigation of the problems that arise in civil and mining engineering, geology, smelting, and the manufacture of coke. The officers for the year 1891 are: President, C. Cadle, general manager Cohaba Coal Mining Company, Blockton; vice-presidents, Thomas Seddon, president Sloss Iron and Steel Company, Birmingham, C. P. Williamson, president Williamson Iron Company, Birmingham; W. E. Robertson, city engineer, Anniston; J. W. Burke, president Tredegar Company, Jacksonville; M. C. Wilson, professor natural science, Normal School, Florence; Col. Horace Harding, U. S. Engineer, Tuskaloosa; treasurer, Henry McCalley, Alabama Geological Survey, University, Alabama; secretary, Wm. B. Phillips, professor chemistry and metallurgy, University, Alabama. The annual dues are $5. The society will meet three or four times a year at different places in the State, for the reading and discussion of papers, which will afterward be published for the use of the members. The next meeting will be held in Birmingham, January 28, 1891.

Eugene H. Cowles of the Cowles Electric Smelting and Aluminum Company, Cleveland, Ohio, writes a letter to the New York *Tribune* in which he criticises both the terms "aluminium" and "aluminum" as being too long for utility, and suggests as a name for the new metal the word "alium."

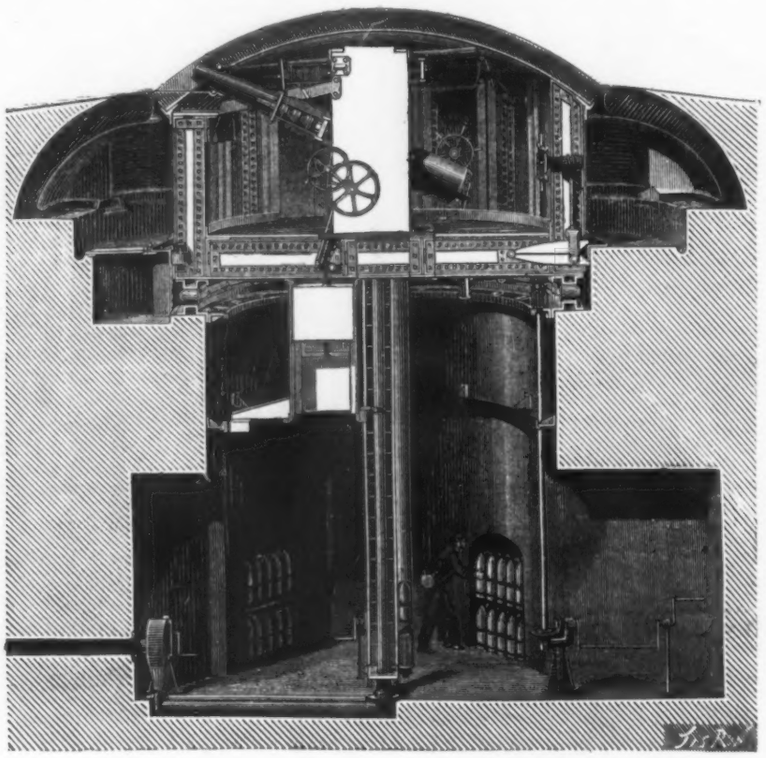
The Municipal Assembly of St. Louis, Mo., has begun a warfare against the smoke nuisance in that city. A bill is shortly to come up before them requiring every manufacturer to use a smoke consumer, and making it a misdemeanor to fail to comply with same.

The Creusot Armor-Clad Fort.

Some years since the Belgian Government decided to adopt for the defense of the Meuse and Escaut rivers armored forts on the general plan of General Brilamont. Contracts for the construction of these forts were divided among a number of French works, ten of them being given to the Creusot works of Schneider & Co. The latter firm completed its first some time since, and in October made its first trials with it in the presence of numerous interested officers. *Le Génie Civil* has published an article on the subject by E. Weyl, from which we take the following:

The forts are arranged so that nothing is exposed above the level of the ground but the dome of the cupola, which is armored with 200 mm. steel armor. The conditions to be met were to provide guns with hydraulic brake and automatic recovery, the recoil being limited to one caliber. The design was to allow of a range between 25° elevation and 2° depression for the guns. The accompanying engravings show clearly the general arrangements of the fort. It will be observed that it consists of a dome of armor abutting against a chilled iron ring 320 mm. thick at its upper edge and 240 mm. thick at its lower part. The armored dome is separated by a plate iron cylinder reinforced by 14 riveted columns. The platform is borne upon a ring and rollers so that it can readily rotate, special arrangements being made to provide against a movement of the dome as the result of the firing. Twofold provision is made for aiming the gun, the first being to rapidly revolve the chamber so as to bring the gun to bear approximately, and the other located in the firing chamber for the exact aiming.

The armor of the dome is divided transversely into three plates, the joints being made with lead. The chilled iron ring is formed of six segments bolted together. The two guns themselves are projected beyond the two firing holes when occasion demands it. It will be observed that the ammunition is stored below in masonry vaults, and that there are arrangements for hoisting it into the firing chamber. A greater part of the weight of the gun is counterbalanced, as shown in the drawings. The experiments carried on at the Creusot works with the completed fort showed that there was little annoyance from the firing of the guns in the chamber and very little trouble from the smoke. It is interesting to add the results of the firing tests made on a section of the armor intended for the forts. The engravings given show the effects of the projectiles both on the front and on the back of the plate. Five shots were fired at the corners and at the centers of a 250 mm. square, the projectile being a 39 kg. chilled iron Châtillon-Commentry. The shots themselves are numbered on the plate. No. 1 penetrated 147 mm., the projectile remaining intact and falling in front of the plate. The same was true also of the other shots, the second penetrating 148 mm., the third 149 mm., the fourth 144 mm., and the fifth 150 mm. The plate itself did not show the trace of a crack, which proved it to be homogeneous.



THE CREUSOT ARMOR-CLAD FORT.

Making Contracts by Correspondence.*

That which is known in law as a contract is, in practical effect, the foundation of all business transactions. A large proportion of business contracts are entered into as a result of negotiations conducted by correspondence; and there are many special principles of law which govern the making of contracts in this manner. The essential elements of a contract are consideration and agreement. Without a sufficient and valid consideration a contract cannot be enforced, and without the mutual agreement of the parties no contract can be created. Each of the parties concerned in a contract must agree to all the items of the contract which any of the others agree to, and if there is a single item to which one of the parties does not agree, there is no contract. This agreement must be either expressed or implied, and consent by implication must be so clear and unmistakable as to leave no ground for question as to the intent of the party against whom the consent by implication is urged. The inception of a contract made by mail is in the posting of a letter containing a proposition. A proposition made in this way is absolutely binding upon the proposer, if it is accepted before it is recalled. It may, however, be recalled or countermanded up to the time it is accepted. If it is desired to withdraw a proposition made by mail, the withdrawal must be brought into the actual possession of the party to whom the proposition is made before it is accepted. To illustrate: Let us suppose that a merchant in New York desires to submit to a merchant in Chicago a proposition for the sale of goods. He deposits in the mail a letter containing his proposition, and by the next mail forwards a letter withdrawing or modifying the offer made in his first. If after the receipt of the proposition, and before the receipt of its withdrawal or modification, the merchant in Chicago deposits in the post office an acceptance of the proposition, the contract is complete and the withdrawal is of no avail. If the letter of acceptance had been signed and sealed, but at the time of receiving the withdrawal should still be in the possession of the Chicago merchant, the withdrawal would be operative and the contract would not be consummated by the acceptance. The theory of the law is, that in the one case the acceptance is still within the control of the acceptor, while in the other it has passed beyond his control.

It is undoubtedly a fact in practical experience that if the acceptance were still in the possession of the post office at Chicago it would be subject to recall, but the law fixes upon the time at which the letter is actually placed in the possession of the post office as the time at which the rights of the parties are determined. In order to constitute a contract the acceptance must be an absolute and unconditional acquiescence in all the terms of the

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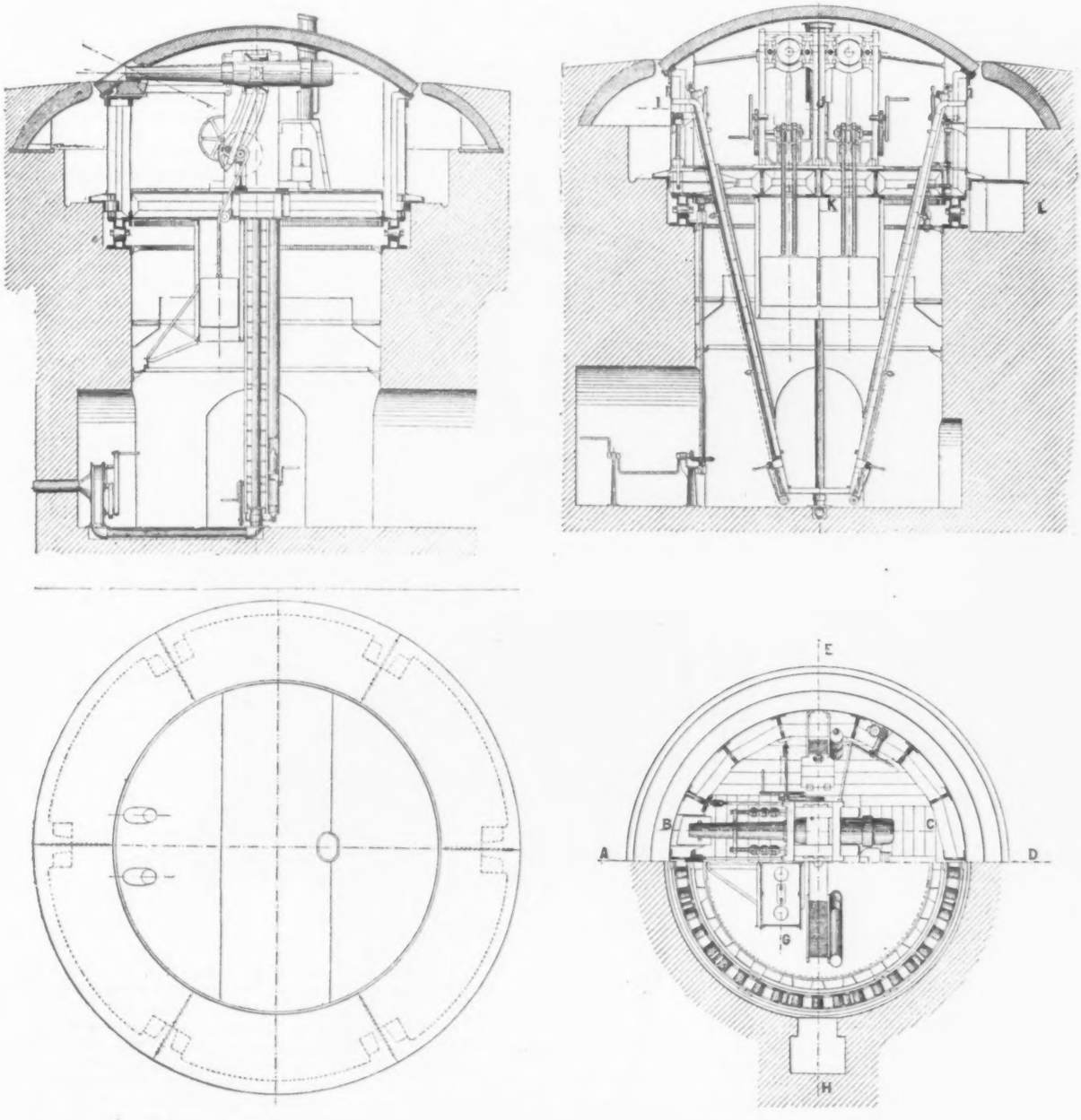
proposition. If the acceptance is coupled with conditions they must, in turn, be unconditionally accepted, and so on, until at last there is an absolute acceptance by each party of all the propositions of the other. This acceptance need not always be expressed in words, but may sometimes be implied from the acts of the acceptor. If, after the submission of a proposition, the one to whom the proposition is submitted proceeds as if it had been accepted, that will amount to an acceptance of the goods might be shipped to him. On the same day this was written the other party wrote a letter containing additional propositions. These additional propositions were considered by the first party, and negotiations were continued for some time, and finally dropped. Afterward the purchaser endeavored to assert a contract of agency for five years, because the goods were shipped after the receipt of his letter, outlined above. But the fact that negotiations were continued after the shipment of the active market could not be held for consideration as long as an offer made on a commodity of fixed value. As a general rule the acceptance of an offer before the intervention of any circumstances which affect its value is within a reasonable time, though this is a matter governed almost entirely by the established usages of trade. What would be a reasonable time in one case would not be a reasonable time in many other cases; an acceptance within a week might be sufficient in some



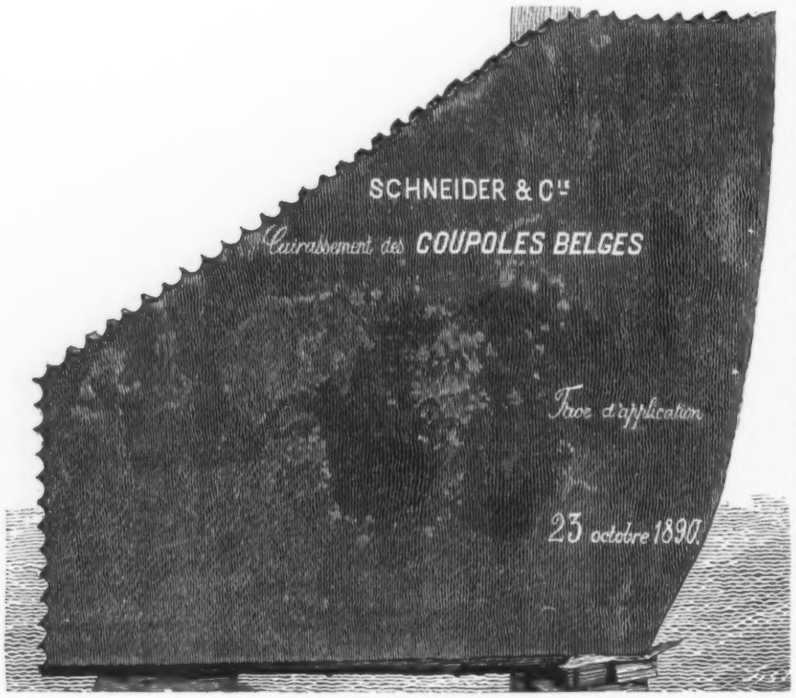
DETAILS OF THE CREUSOT ARMOR-CLAD FORT.

proposition, provided the acts were such as would be entirely inconsistent with a denial of acceptance. But the acts relied upon to show an implied assent to a written proposition, and so constitute a contract by implication, must be such acts as are absolutely inconsistent with any other theory than that of the acceptance of the proposition. A person wrote to another that under specified conditions he would accept the agency for certain goods, concerning which negotiations were pending, and requested that a contract be made for five years, and directed that "under these conditions" a certain quantity of the goods showed that the parties had not arrived at a final agreement and that no contract had actually been entered into.

Where the terms of a contract are negotiated by correspondence, a condition of limitation which is once proposed and accepted need not be thereafter repeated or referred to in order to preserve its force, if it was definitely agreed upon. An offer made by letter may be accepted within and is binding for a reasonable time after its receipt by the one to whom it is made. What is a reasonable time depends entirely upon the circumstances. An offer made on an cases, while a delay of a day might be fatal in others. In this, as in most commercial matters, the law is largely determined by the evidence of good faith. Where a contract has been made by mail it may be proved by the correspondence between the parties. The one desiring to prove the contract may introduce the letters of the other party in evidence, and serve upon him a demand that his own be produced. If this demand is not complied with he may then prove their contents by letter press copies or other memoranda made at the time, using them for the purpose of refreshing the memory of

the witness who gives the testimony. The letter press copying book of a business man may be used as direct evidence against him, but it cannot be as evidence in his favor, except as outlined above.

These few suggestions regarding the formation of contracts by correspondence may contain much that is familiar to many business men, but if the cases which are litigated in the courts may be taken as an indicator they lead to the conclusion that many men constantly engaged in making contracts are not entirely familiar with the practical application of the fundamental principles of contract law.



Effect of Shots on Back of Plate.

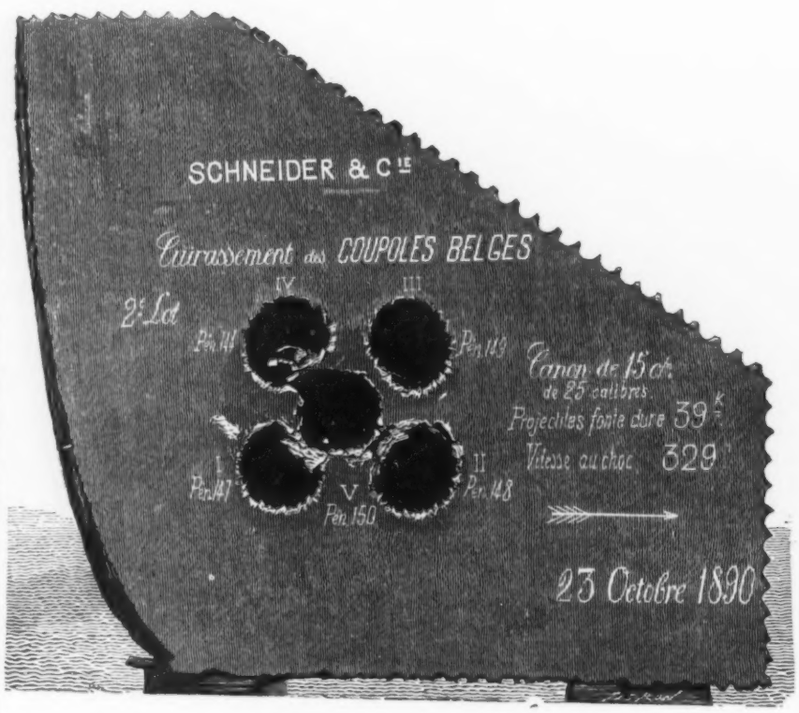
NEW PUBLICATIONS.

WEDDING'S BASIC BESSEMER PROCESS. Translated by William B. Phillips, Ph. D., and Ernst Prochaska. Published by Scientific Publishing Company, New York. $3.50.

Dr. Hermann Wedding is so well known a metallurgical writer that no discussion of the merits of his work need be gone into. The original work was an addition to Wedding's "Metallurgy," originally undertaken as a translation of Percy's classic work, but gradually developed into a far more valuable text book. The work, which was published in 1884, contains the best connected account of the basic Bessemer process, although probably a better book might be compiled from the data published in the leading technical journals. This, apparently, the translators felt unwilling to do. We are particularly pleased, however, that they take special pains to attract attention to the work done in the early stages of the basic process by von Ehrenwerth. His studies constitute the most striking example in modern metallurgy of the results obtainable by purely theoretical deduction. While practical steel workers were groping their way to the determination of the best specification for basic Bessemer pig, he showed by computation that phosphorus could be employed in the place of silicon as the heat producing element. It has always seemed as though he was not accorded the credit to which he is unquestionably entitled.

Wedding's work deals almost exclusively with the basic Bessemer process, and for that reason is only of minor direct interest to American iron masters. It is still an open question whether the basic Bessemer process will be able to compete successfully against the acid Bessemer on the one hand and the open hearth acid or basic on the other in this country. Since the date of Wedding's book the relative position of the basic Bessemer and the basic open-hearth has changed wonderfully in Germany, the construction of iron plants having almost entirely developed the latter. The translators of Wedding's work seemed to have realized that fact, and Ernst Prochaska has added a chapter, in which, however, he fails to draw as sharply as it should be done the line between the pig and ore process, as typified by the Brymbo practice, and the pig and scrap, which is the method in more general use. The translators have undertaken occasionally to annotate, but have hardly gone far enough. Thus they fail to call attention to the fact that the Kauff washing process is being practiced on a large scale at two works in this country.

The translation, on the whole, is good, although it might well have been made less literal without any danger of conveying properly the author's meaning. Such lapses as calling a neutral lining an "indifferent" lining should not occur, however.



Effect of Shots on Front of Plate.

SECTION OF ARMOR FOR CREUSOT ARMOR-CLAD FORTS.

Two important ordinances have been signed by the Mayor of Philadelphia, which have an intimate bearing upon the future prosperity of that city. One authorizes the construction of the Belt Line Railroad, comprising a cordon of tracks on the river front, which is expected to give an incalculable relief to the shipping and general mercantile interests of the port. The Reading Terminal bill provides for elevated tracks on some of the main streets and for extensions into the suburbs.

The United States immigration returns for 11 months of this year show an increase of 20,826 from Bohemia, Hungary and Austria over last year, an increase of more than 50 per cent. The Denmark, France and Germany returns are about as last year. The United Kingdom shows a falling off of 16,634. Italy and Poland increase from 32,120 to 77,899. Brazil is just now making extraordinary efforts to attract European immigration, and the United States can now afford to make large concessions for her benefit.

THE EFFICIENCY OF POWER SCREWS.

BY ARTHUR J. FRITH, C. E.

Considered as an element of mechanism, the screw is used either for the transmission of motion or for the compounding and application of power. When it is used as a transmitter of motion, a governing point in the design is the question of accuracy and wear—but not that of efficiency. When as in presses, or as in the old fashioned differential screw jacks, the screw appears as a compounder of force, we are all aware that there is frequently a very large waste of energy, and we must balance against the low efficiency of this element its advantages as a simple compact compounder of effort, with the ability in itself of holding its load.

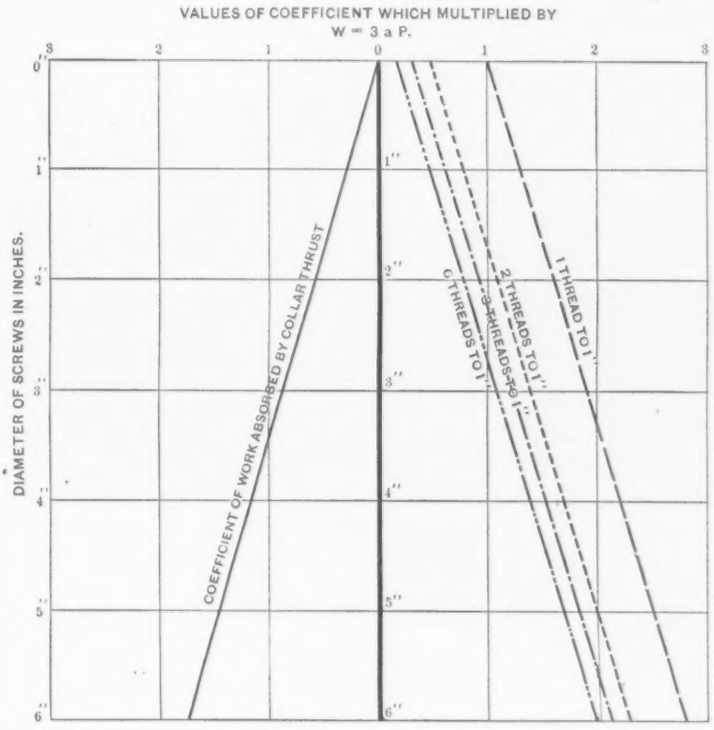

VALUES OF COEFFICIENT WHICH MULTIPLIED BY
W = 3 a P.
DIAMETER OF SCREWS IN INCHES.
COEFFICIENT OF WORK ABSORBED BY COLLAR THRUST
6 THREADS TO 1"
3 THREADS TO 1"
2 THREADS TO 1"
1 THREAD TO 1"

Fig. 1.

It will therefore be of interest to designers to see how a purely theoretical investigation, founded on practical data, indicates to us, how enormous is sometimes this waste of energy, and a few general deductions will show us where and how it can be frequently largely mitigated.

If P = the force applied at the spanner,
a = the diameter of the circle described by P,
w = the load to be overcome,
n = the number of single threads to the inch on the screw,
b = the mean diameter of the thread,
f = the co-efficient of friction,
d = the mean diameter of the thrust collar,
I = the inclination of the thread $= \frac{1}{3\,n\,b}$

And E = the efficiency of the screw, then the frictionless expression for the power of the screw, may be expressed as the work of the spanner $3\,a\,P = \frac{W}{n}$

and if the friction of the thread only, be added to the expression, it will become

$$3\,a\,P = \frac{W\,(1\,+\,3\,n\,b\,f)}{n}$$

in which the energy to be exerted increases directly as the load applied, with the diameter of the screw and with the co-efficient of friction, and inversely as the number of threads; while the efficiency of this element

$$E = \frac{1}{1\,+\,3\,n\,b\,f}$$

varies inversely as the number of threads, as the diameter of the screw and as the co-efficient of friction, and not as the load; or it may be expressed as

$$E = \frac{I}{I\,+\,f}$$

when it appears that it depends solely on the inclination of the thread and the co-efficient of friction. A result similar to that demonstrated practically by Mr. Lewis in his experiments on Worm Gearing. ("Transactions" Am. Soc. Mechanical Engineers, Vol. VII.)

As the energy absorbed by the thrust is $3\,d\,W\,f$, if both the friction of the thread and that of the collar thrust be considered in our expression, then the work expended on the spanner during one revolution will be

$$3\,a\,P = \frac{W(1\,+\,3\,n\,f\,(b\,+\,d))}{n}$$

and the efficiency

$$E = \frac{1}{1\,+\,3\,n\,f\,(b\,+\,d)} \quad \text{or} \quad \frac{I}{I\,+\left(\frac{b\,+\,d}{b}\right)f}$$

or the efficiency of the screw is greater as the number of threads, the co-efficient of friction and the diameter of the screw thrust are less—a result evidently correct, or, we may say, the greater the inclination of the thread and the less the diameter of the collar compared to that of the screw, the greater will be the efficiency.

The application of these formulæ will, it is believed, give results that will approximate very closely to those of actual practice. In special cases, however, either or both the diameter of the screw and the number of threads are limited by the practical consideration of commercial sizes and our shop tools. Therefore it will be instructive to show graphically the comparative energy that would be required or the relative efficiency that might be expected from commercial sizes of screws with whole numbers of threads to the inch.

These are expressed in a couple of charts prepared some time since, in which the energy absorbed by the collar thrust and that required by the screw is shown separately. In the chart of efficiency the friction of the thread is alone considered.

The abscissas in the first chart give for each size of screw and number of threads the value of that co-efficient, which, multiplied by W, the load, will give the calculated energy expended in one revolution of the spanner, to which is added the abscissa of the thrust line, which give similar co-efficients for various mean diameters of thrust collars.

It will be noticed that the lines of increase for the various pitch of screws are parallel—and, for instance, that the energy required to operate a screw with three threads to the inch is but little more than that of the six threaded screw, while the useful work is double; when a collar thrust of the same size is used the difference is still more markedly in favor of the coarser thread. Again, with a 6-inch collar and a 6-inch screw, the co-efficients for six threads and one thread to the inch are respectively 1.8 + 2 = 3.8 and 1.8 + 2.7 = 4.5, an increase of about 18 per cent., but the amount of work accomplished is six times greater: If, however, it were desirable to use a 3-inch screw with a 1-inch pitch, the total co-efficient would be 2.6 instead of 3.8, and we would be doing six times the amount of work with two-thirds of the power.

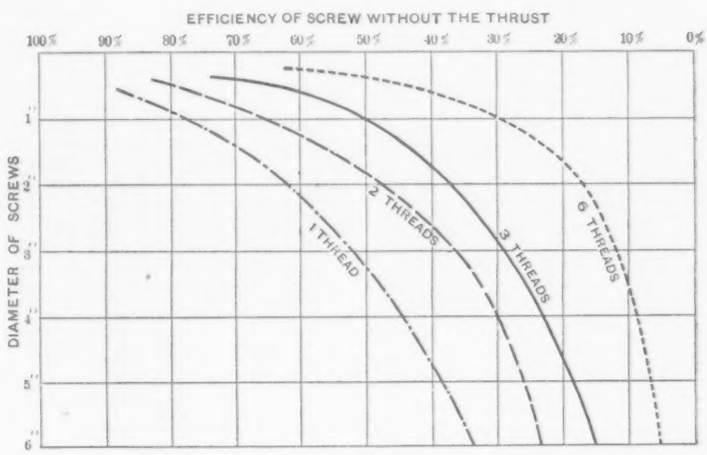

EFFICIENCY OF SCREW WITHOUT THE THRUST
100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%
DIAMETER OF SCREWS
1 THREAD
2 THREADS
3 THREADS
6 THREADS

Fig. 2.

In Chart 2 are represented the curves of efficiency for these screws, the friction of the screw alone being considered, which shows how much more efficient is the coarser than the fine threaded screw, but more particularly the superiority of the smaller sizes.

These charts are made out for a value of the co-efficient of friction $= \frac{1}{10}$, which according to the large series of experiments made by Mr. Lewis for W. Sellers & Co., is probably close to the ordinary condition of practice when good lubrication is provided for. Ball or roller bearings are often used for screw thrusts with a great reduction of the amount of lost energy—especially if they be such that have ample surfaces of contact. There has appeared in a recent number of the *Mechanical World*, a foreign periodical, an illustration of a screw in which a large series of balls are introduced between the thread and the nut, with a by-passage to allow the ball emerging at one end to re-enter at the other, an arrangement which would undoubtedly reduce the friction to very low limits if the practical difficulties are successfully overcome.

To recapitulate, we see that in the use of power screws it is preferable :

1. That they be of small diameter.
2. That the thread of the screw be coarse.
3. That sufficient bearing surface on the thread be obtained by lengthening the nut as the diameter is reduced.
4. That if collar thrusts be used they be as small as possible.
5. And an increased number used to obtain bearing surface.
6. The step or button thrust is more efficient.
7. Especially with friction plates to obtain surface.
8. That ample lubrication should be used to keep down the co-efficient of friction.
9. That ball or roller thrust bearing are the most efficient thrust, when used within proper pressures and where they can be easily cared for.
10. That they had better be of large diameter to obtain bearing surface.

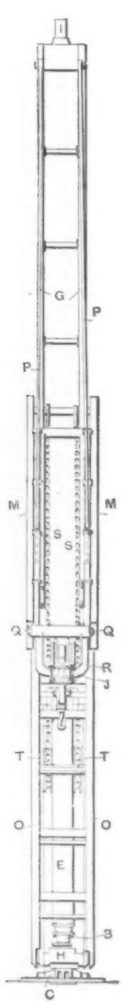


Fig. 2.—End Elevation.

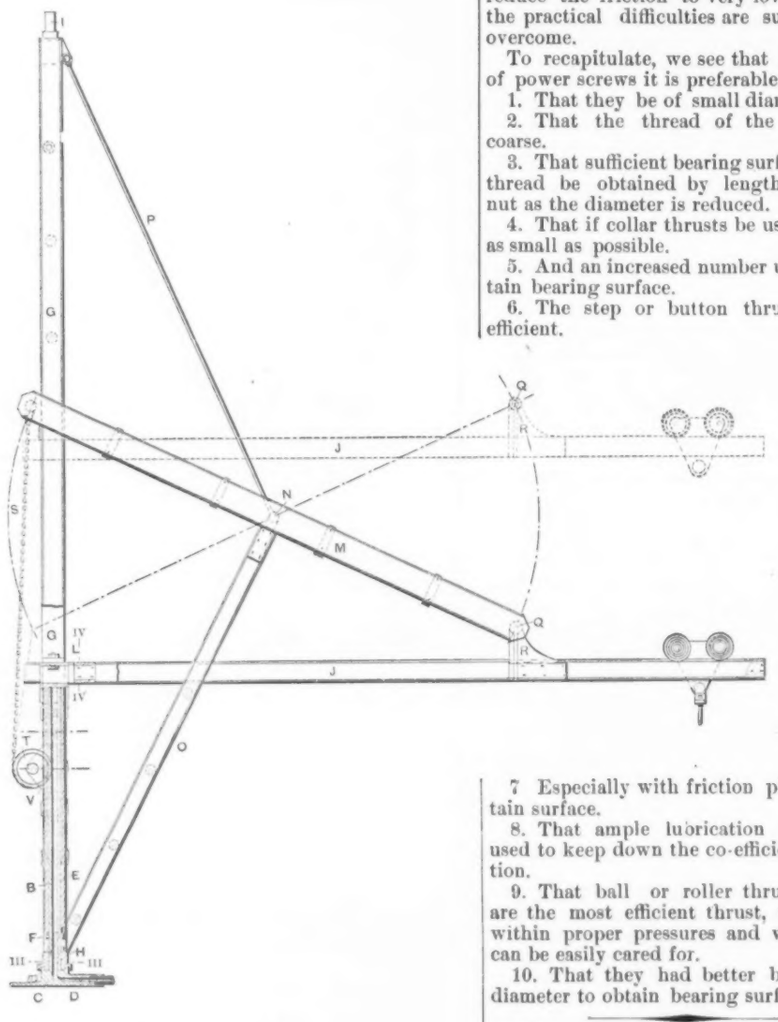


Fig. 1.—Side Elevation with Cylinder and Ram in Section.

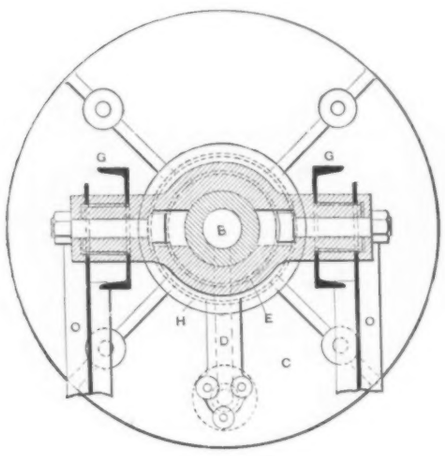


Fig. 3.—Sectional Plan at Step.

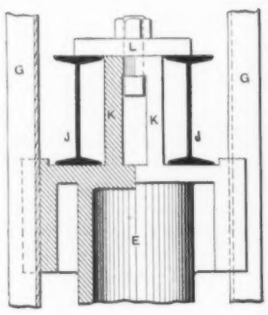


Fig. 4.—End Elevation of Top of Cylinder.

THE KENNEDY AND FORTER CRANE.

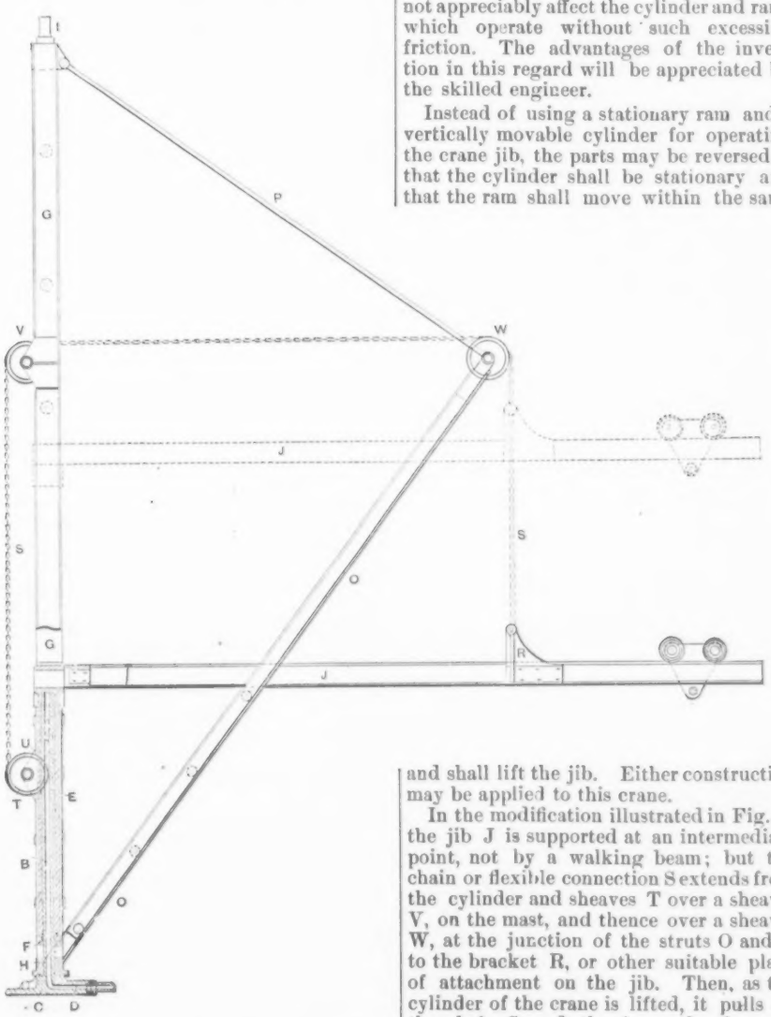
The Kennedy and Forter Crane.

The crane of which we here present drawings of the principal features is the invention of Julian Kennedy and Samuel Forter of Pittsburgh. Two of them are now in successful operation at the Latrobe Steel Works, Latrobe, Pa.

In the drawings B represents the upright hollow ram or plunger of the crane, which is set at its lower end on a step, C, having a water passage, D, which communicates with the passage through the ram. E is an inverted cylinder which is fitted on the ram and is vertically movable thereon, being provided with suitable packing F, making a water tight joint between the ram and cylinder. The mast of the crane is composed of upright beams G, secured to the cylinder and provided at the lower end with a foot, H, which encircles the plunger and is rotatory on the step C. The top journal I of the mast fits in a suitable bearing or steadiment, which is not shown. The jib of the crane is compound, being constituted for two parts, one a horizontal part which rests on the vertically movable cylinder and is carried thereby, and the other a pivoted swinging beam which is connected with the horizontal part before mentioned and serves to support the same. The swinging beam may itself be properly called a jib, but in order to prevent confusion of terms we shall designate it as a walking beam, and shall call the horizontal part the jib.

The jib J is composed of parallel horizontal beams set on top of the cylinder E

on each side of a vertically projecting portion K, Fig. 4, thereof, and held in place by a cap plate, L, so as to be capable of slight longitudinal motion. The walking beam M is composed of parallel beams pivotally connected at an intermediate point N to diagonal struts O and P, which extend from the botttom and top portions of the crane mast respectively. At the outer end the parts of the walking beam M are pivotally connected by a cross bolt, Q, to brackets R, projecting from the beams of the jib, and the inner ends of the parts of the walking beam are provided with chains or flexible connections S, which extend therefrom around sheaves T (journaled in brackets V projecting from the mast) to the cylinder to which they



The Kennedy and Forter Crane.—Fig. 5.—Elevation, Showing Modified Construction of Crane.

are fixed. The consequence of this construction is that as the cylinder is raised to lift the jib, the draft of the cylinder on the chains S will pull down the inner end of the walking beam M, and will elevate the outer end, as shown by dotted lines in Fig. 1. The burden carried by the jib is supported by the connection of the walking beam to the brackets R, and the load is transferred from the intermediate pivot N of said beam to the diagonal struts O and P, and by them to the mast, on which they exert a vertically compressing force.

On inspection of the drawing it will be seen that the walking beam performs this function of a lifting support in every position of the jib, and as it is composed of separated beams it affords no obstruction to the vertical rise of the jib between them nor to the motion of the trolley on the jib. The consequence of this construction is that the great bending moment exerted by the jib on the cylinder or plunger in former cranes is obviated, and the strain is distributed upon the mast in such manner as to secure the most effective results in strength of material and ease of motion of the parts.

In cranes where the jib is lifted solely by the direct action of the upright cylinder the bending moment on the jib being transferred to the cylinder and ram causes these parts to bind, and the resulting friction increases considerably the power required to lift the burden. This is not so in this crane, since the bending moment is taken up by the walking beam and does not appreciably affect the cylinder and ram, which operate without such excessive friction. The advantages of the invention in this regard will be appreciated by the skilled engineer.

Instead of using a stationary ram and a vertically movable cylinder for operating the crane jib, the parts may be reversed so that the cylinder shall be stationary and that the ram shall move within the same and shall lift the jib. Either construction may be applied to this crane.

In the modification illustrated in Fig. 5, the jib J is supported at an intermediate point, not by a walking beam; but the chain or flexible connection S extends from the cylinder and sheaves T over a sheave, V, on the mast, and thence over a sheave, W, at the junction of the struts O and P to the bracket R, or other suitable place of attachment on the jib. Then, as the cylinder of the crane is lifted, it pulls on the chain S, and the force thereby supplied will be exerted as a lifting force on the jib at the place of attachment R. This lifting force is transmitted to the mast through the struts in the manner above explained, with reference to the construction illustrated in Fig. 1.

Mower Patents in Dispute.—In the United States Circuit Court in Pittsburgh, the Eureka Mower Company of Utica, N. Y., entered suit against the administrators of E. T. Fox of Towanda, Pa., and the Eureka Mower Company, also of Towanda, for $100,000. It is claimed by the plaintiffs that in 1883 they purchased from the Towanda Company, of which Fox was president, the patent rights for the exclusive manufacture of the Eureka mower. Upon the representation of Fox and the defendant company that the rights were exclusive and the profits $12,000 a year the plaintiffs paid $50,000 for the patent rights. Since then, however, they have learned that the defendants did not own the exclusive rights, and that there are prior patents. They state, also, that they have lost money, and they ask for $100,000 damages.

The Calculation of Blast Furnace Charges.

BY FRANK F. AMSDEN, B.S., E.M.,
SCRANTON, PA.

Since the production of any desired pig iron is closely associated with its accompanying slag, we must obtain an analysis of a slag made at the same time as the pig iron which we wish to reproduce. From this analysis we must calculate the ratio of the SiO_2 to bases. Having this ratio (say, 0.85 in this case), we can readily calculate the amount of flux to be added to any "ore mixture" to produce a slag with a composition approximately the same as the one wanted.

I make out tables for the limestone, fuel ash and each of the ores as follows:

Limestone (100 *pounds*).

	Analysis.		Molecular weight.			
SiO_2 =	3.85	÷	60	×	4 =	0.257
Al_2O_3) / Fe_2O_3) =	2.15	÷	102	×	6 = 0.126	
CaO =	28.95	÷	56	×	2 = 1.034	
MgO =	20.02	÷	40	×	2 = 1.001	2.161

Excess of basic quantivalence = 1.904

The 3.85 pounds SiO_2 divided by 0.60 (the molecular weight of SiO_2) gives the number of molecules of SiO_2. Multiplying this quotient by 4 (the quantivalence of SiO_2)—we have the total quantivalence of the SiO_2. The quantivalence of the Al_2O_3, CaO, &c., is obtained in a similar manner:

Fuel Ash (100 *pounds*).

Ash = 8.5 per cent.

	Analysis.		Molecular weight.		Equivalence.	
SiO_2 =	50.00	÷	60	×	15 =	3.3333
Al_2O_3) / Fe_2O_3) =	45.00	÷	102	×	6 = 2.6470	
CaO =	1.59	÷	56	×	2 = 0.0536	
MgO =	2.25	÷	40	×	2 = 0.1125	2.8131

Let Z = pounds of limestone to be added to 100 pounds of ash to form a slag in which SOi_2 = 0.85; then

$$3.3333 + 0.00257\,Z = 0.85$$
$$2.8131 + 0.02161\,Z$$

Z = 59.6 pounds limestone per 100 pounds ash hence 100 pounds fuel (containing 8.5 pounds; of ash) will require 5.0 pounds limestone.

If $\frac{SiO_2}{Bases} = 1.00$, then 100 pounds fuel will require 2.3 pounds limestone.

The following is the method of computing the quantity of limestone for each ore, "A" being given as an example. The analysis of the other ores can be gathered from the table below. When dealing with the slag composition only one-half of the manganese is computed, under the assumption that the other half enters the iron:

"A" ore (100 pounds) fe = 48.5 per cent. and P. = 0.030 per cent.
1.96 tons ore per ton of pig (pig 95 per cent. fe.).
Cost of ore per ton of pig .. .. $
P = 0.059 per cent. in pig.

	Analysis.		Molecular weight.		Equivalent.	
Si_2O =	20.68	÷	60 × 4	=	.....	1.3787
Al_2O_3 =	4.80	÷	102 × 6	=	0.2824	
½Mno =	0.29	÷	70 × 2	=	0.0083	
CaO =	5.38	÷	56 × 2	=	0.1921	
MgO =	2.035	÷	40 × 2	=	0.1175	0.6003

$$\frac{1.3787 + 0.00257\,Z}{0.6003 + 0.02161\,Z} = 0.35$$

Z = 54.9 pounds limestone per 100 pounds of ore.

If $\frac{SiO_2}{Base} = 1.00$, then 100 pounds of ore will require 40.9 pounds limestone.

Let it be supposed that the charge be composed of 12 barrows of fuel, 12 barrows of ore and 6 barrows of limestone, and say that the fuel (6000 pounds) will carry 9100 pounds of ore to be divided as follows:

Ore.	Pounds.
2-12 "A"	1500
2-12 "B"	1500
2-12 "C"	1500
2-12 "D"	1500
4-12 "E"	3000

How many pounds of limestone should be added to this "ore mixture" and fuel to produce a slag in which $\frac{SiO_2}{Bases} = 0.85$?

Turning to our tables, we find:

	Limestone. Lbs.
1500 lbs. "A" ore will require 15 × 55. =	825.
1500 lbs. "B" ore will require 15 × 2.5 =	37.5
1500 lbs. "C" ore will require 15 × 90.8 =	1362.0
1500 lbs. "D" ore will require 15 × 13.7 =	205.5
3000 lbs. "E" ore will require 30 × 3.8 =	114.0
6000 pounds fuel will require 60 × 5.0 =	300.
Hence limestone to be added =	2844
or 474 pounds per barrow	

We can now calculate the composition of the slag by averaging the analyses of the ores, and adding the slag forming ingredients in the fuel and limestone used per 100 pounds of ore:

Kinds of ore.	SiO_2	Al_2O_3	(½) MnO.	CaO.	MgO.	Fe.	P.
2 barrows A	41.36	9.60	0.58	10.76	4.70	97.0	0.060
2 barrows B.	19.08	4.86	3.00	9.76	14.60	98.6	0.054
2 barrows C	50.68	6.54	0.46	2.30	1.80	98.8	0.064
2 barrows D	11.00	1.32	0.16	4.80	2.16	131.0	0.024
4 barrows E	19.00	8.00	1.00	4.60	10.80	248 0	0 280
Divide by 12	141.72	30.22	5.14	32 22	34.06	673.8	0.482
Average	11.81	2.52	0.43	2.68	2.84	56.2	*0.0432

66.7 pounds fuel per 100 pounds ore. 31.6 pounds limestone per 100 pounds ore.

The slag is made up as follows:

	Ore.	Fuel.	Limestone.	Total.	Percentage.
	Lbs.	Lbs.	Lbs.	Lbs.	
SiO_2	= 11.81	+ 2.83	+ 1.22	= 15.86	= 36.7
Al_2O_3	= 2.52	+ 2.55	+ 0.67	= 5.74	= 13.3
Mno	= 0.43	+	....	= 0.43	= 1
CaO	= 2.68	+ 0.08	+ 9.15	= 11.91	= 27.5
MgO	= 2.84	+ 0.13	+ 6.32	= 9.29	= 21.5
	20.28	+ 5.59	+ 17.36	= 43.23	100

As soon as this mixture "gets down" samples should be taken from every flush of cinders during one shift, and the SiO_2 determined. Then whatever correction necessary should be in the amount of limestone. I have usually found the calculated percentage of SiO_2 to be within 1 per cent. of the SiO_2 found by analysis; hence little or no change should be made in the quantity of the limestone used.

I have not deducted any limestone for the SiO_2 reduced to silicon and dissolved in the pig, or added any for the sulphur in the fuel and ore, because 1 pound SiO_2 requires 4.2 pounds of this limestone to saturate it, while 1 pound of sulphur requires probably 6 pounds of it, but the one balances the other in this case, since there is nearly twice as much SiO_2 reduced as there is sulphur in the charge.

The proportion of iron to slag, 1 : 0.8, is sufficient to insure a uniform composition of pig. The ratio of Al_2O_3 to the other basis, 1 : 3.7, is good, but the proportion of MgO to CaO is small. We would probably get better results if there were more CaO and less MgO, for I have found that a given "ore mixture" will require from 2 to 5 per cent. more dolomite than calcite to remove the same weight of sulphur, and also that it is preferable to use calcite instead of dolomite if a strong open grained graphitic iron is wanted, the slag being very basic.

In the case that one of the ores should have an excess of basic quantivalence combine with it an ore having an excess of acid quantivalence, thus

"B" Ore (100 pounds).

Acid quantivalence	0.6561
Basic quantivalence	0.7250

Suppose we combine this with "A" to form a uni-silicate, letting Y = number of pounds of "A" necessary, then

$$\frac{0.6560 + 0.01378\ Y}{0.7251 + 0\ 00600\ Y} = 1.00$$

$Y = 9$ pounds.

The Manufacture of Basic Open Hearth Steel.*

BY JAMES DAVIS, PARK GATE.

The pig iron, which is made at Park Gate furnaces specially for this process, is very suitable for basic working, as will be seen by the analyses below. The blast furnaces are of small capacity, 62 feet high by 17 feet diameter in the boshes, fitted with iron pipe stoves, each furnace yielding 250 to 300 tons per week. To make this basic pig iron a special mixture has to be resorted to, so as to enable us to use Lincolnshire ores. This with a mixture of coal, coke, limestone, &c., made with a gray slag, produced a good speigel or basic iron, of which an average analysis is as follows:

	Per cent.
Carbon	2.50
Silicon	0.357
Sulphur	0.042
Phosphorus	2.63
Manganese	1.68

The special feature of this pig iron is the low percentage of silicon and sulphur, both of which elements are very injurious to the successful working of the basic process. If iron be used in the basic open hearth furnace which contains over 1 per cent. of silicon the basic lining would soon suffer, there being nothing so injurious to the basic lining as silicon, and, further, a siliceous slag means extra quantity of ore used, which latter means wild and therefore inferior metal. Sulphur and oxygen are the greatest enemies the open hearth steel melters have to contend with.

At Park Gate we have two 30-ton furnaces for making steel by the acid process, and two 20-ton furnaces with basic lining. The basic furnaces are making nine and in some instances ten charges per week, making an output of 145 to 175 tons of good basic steel ingots. The furnaces are arranged in a line, the charging platform on one side being a sufficient distance above the floor of the works to admit the casting ladle and carriage, which runs on rails over a pit parallel to the furnaces.

Each furnace is provided with a separate chimney and with double faced mushroom valves and regenerator chambers of large capacity, but similar in construction to the most modern open hearth furnace. With such chambers a basic furnace has been working 12 months without changing the checkers. The furnace proper is composed of two wrought iron sides, supported by double head rails and H iron buck staves well braced together. The bottom of the furnace is built up of cast iron plates, supported on H iron girders. The brickwork of the furnace is built in the usual manner—only, instead of using best silica bricks for lining from the bottom of furnace up to the level of fore plates, ordinary fire brick will do; then as a separator just above the slag line a chrome brick is built in all round the lining. After the furnace is completed and the brickwork well dried, we commence putting in the bottom and banks, with shrunk lime, *i.e.*, hard burnt dolomite, such as supplied by the Steetley Lime Company, Worksop, and by the Raisby Basic Company, Limited, Coxhoe, well ground and mixed with just sufficient anhydrous tar to make it stick together when compressed. This is well rammed with hot irons. I have used compressed bricks for lining and putting in bottom and banks, but prefer ramming in the bottom. After completing, a fire may be lighted, so as to get furnace ready for receiving gas; then the bottom will become very hard. I have just said that the bottom is rammed; this is the case to within a few inches of the ultimate shape. These last few inches are welded on by heat, *i.e.*, by throwing into the furnace small pieces of dry shrunk lime—no tar—and by giving the furnace as much heat as it will stand. When the furnace is properly shaped and heated up the charge may be introduced.

The charge consists of 75 per cent. pig and 25 per cent. scrap. The scrap consists sometimes of wrought iron and steel mixed, but I prefer all steel. Limestone with a little pottery mine is usually charged on the bottom and banks in sufficient quantity to make a basic slag from the first; pig and scrap follow; when the charge is fully melted and clear off the bottom, additions of ore and limestone are given at intervals until the man in charge commences to sample. By the fracture of the sample it is judged whether sufficient ore has been added. Here comes the most important part of making good basic steel, which is to work the charge so that when it is turned into the molds it will be perfectly quiet, and will give a clean ladle. The difficulty in teeming is not always due to lack of heat. In such a case there has probably been as much heat put on as the furnace will stand, but the slag invariably contains a large excess of oxide of iron, and is blacker and more metallic in appearance than it should be. I contend that if the slag is not kept in proper condition during the time of working it is impossible to get good solid ingots. To oxidize the phosphorus easily and without much loss of iron the slag must contain an excess of lime. There are several advantages in keeping the slag as basic as convenient. We prevent the formation of the oxides of iron and consequently cold and lively metal. We also reduce the loss of iron, and produce a slag with more phosphoric acid, and therefore of more value for agricultural purposes.

All the slag is retained until the end of the charge. I tried the experiment when at Bolckow, Vaughn & Co. of tapping off a portion of the slag, but the running slag off during the working of a charge means the wasting of oxide of iron; hence a furnace for working basic steel must be considerably larger than a furnace working acid for equal output, as the weight of the basic slag is from 20 to 25 per cent. of the weight of the steel produced. The slag from the basic open hearth usually contains 13 to 15 per cent. of phosphoric acid and is therefore saleable for agricultural purposes. These furnaces are worked with two Wilson patent 8 hundredweight gas producers to each furnace. The consumption of slack inclusive of Sunday and heating up furnaces which have been under repair is about 11 hundredweight per ton of ingots. A charge with 14 tons of spiegel or basic iron and 5 tons of scrap was worked with 42 hundredweight to 48 hundredweight of pottery mine and 53 to 60 hundredweight limestone, giving an average consumption of 2½ hundredweight of pottery mine and 3 hundredweight of limestone per ton of steel ingots produced.

I prefer limestone to lime for several reasons. There is no lime dust to act upon the silica lining and blocks, which tends to fuse the face of bricks, therefore

* Read before the Cleveland Institution of Engineers.

causing the lining to wear more rapidly, more especially the face of the blocks. There is no dust to be carried away by the draft into the checkers, which run for 12 months without changing. Finally, it is less expensive. The following account of a charge may be taken as fairly typical of working at Park Gate. The furnace was charged at 4.30 a.m., tapped at 1.30 p.m.; time in working, 9½ hours; the charge was teemed into one 5-ton ingot, the remainder into ingots weighing from 2½ tons down to 1 ton each. The 5-ton was cogged into a slab 34 x 8 inches and rolled into a plate 30 feet long, 3 feet 6 inches wide and 1 inch thick; the other ingots were cogged and rolled into plates ⅞ x ⅝ inch, various sizes. Table No. I gives the chemical and mechanical properties of the above charge.

The reason why the ⅝-inch plates have a lower tensile strain than the 1-inch plate is that they were rolled much smaller and therefore finished at greater heat.

The repairs to the hearth after tapping are made with ground dry basic. In some instances basic mixed with tar is resorted to. These repairs are generally required for the most part round the slag line. This is quickly effected, and the furnace is at once ready to charge again.

Table No. 1

Analysis.	Dimensions of test piece.			Breaking strain.		Extension.	Remarks.
	Width.	Thickness.	Area.	On piece.	Sq. inch.	On 8 inches.	
				Tons.	Tons.		
Carbon..... 0.15	0.98	0.98	96	28.1	29.27	22	Cold.
Silicon..... Trace	0.98	0.89	87	25.0	28.73	24	Temper.
Sulphur 0.43	0.98	0.74	72	20.2	28.0	28	Bends.
Phosphorus.... 0.06	1.47	0.68	99	29.2	29.5	24	Good.
Manganese.. . 0.60							

The question has often been raised, do you pig back to get such results. I generally use about 3 hundredweight of low silicon hematite pig, so that the metal is reboiled just as in working the acid process. In fact, it may be resorted to the second or third time if the heat is not good or if the charge is not sufficiently free from phosphorus. The phosphorus must be eliminated in the presence of carbon, and if the phosphorus has not all gone when the carbon has then fresh carbon must be added so long as there is any phosphorus to remove.

Having shown in Table No. 1 results of ¾-inch, ⅞-inch and 1-inch plates, I now give the results of tests made from plates suitable for ship and bridge work, to pass requirements of 28 to 32 tons per square inch, and the results of tests for ordinary boiler requirements (26 to 30 tons per square inch):

Table No. 2.

Analyses.	Dimensions of test piece.			Breaking strain.		Extension.	Remarks.
	Width.	Thickness.	Area.	On piece.	Sq. inch.	On 8 inches.	
				Tons.	Tons.		
Carbon..... 0.14	1.47	0.38	0.55	16.0	29.0	25.5	Cold and
Silicon .....Trace	1.46	0.49	0.71	19.9	28.0	25.0	Temper.
Sulphur 0.046	1.50	0.63	0.94	27.1	28.8	21.0	Bends.
Phosphorus 0.052	1.49	0.80	1.19	34.5	28.9	22.5	Good.
Manganese..... 0.61	1.49	0.79	1.17	34.6	29.5	22.0	
Carbon..... ... 0.12	1.27	0.48	0.60	16.6	27.6	23.0	Cold and
Silicon.....Trace	1.47	0.43	0.63	17.1	27.0	22.5	Temper.
Sulphur 0.050	1.45	0.49	0.71	19.6	27.6	25.0	Bends.
Phosphorus 0.05	1.47	0.45	0.66	17.9	27.1	24.0	Good.
Manganese 0.58	1.48	0.37	0.54	14.6	27.0	23.0	
	1.49	0.34	0.50	13.7	27.4	22.5	

In Table No. 3 I give results of tests made for steel, suitable for boiler and locomotive tubes or any welding quality or plates exposed to flame which may be required to stand 21 to 25 tons per square inch, or 24 to 28 tons per square inch, thus passing admiralty requirements for tube purposes. Those marked x have been annealed, and were made for locomotive tubes, 21 to 25 tons per square inch.

Having given tables showing both the chemical and mechanical results of steel tests made from various thicknesses of plates, it is useless for me to make reference to bars, angles, tees, bulbs, &c., as steel can be made to give similar results when required; in fact, test results might be multiplied without end. Suffice to say that those gentlemen who were favored, as members of the Mechanical Engineers, with a visit to these works, were privil eged to see for themselves tests made in ev ery conceivable way. There were on view for inspection samples showing the admirable quality of basic steel for large rounds, plates and bars of every description, the samples shown being welded, and not only worked up by an ordinary blacksmith hot, but also bent, punched and twisted in every conceivable form. There were three pyramidal erections of slabs 36 inches by 10 inches down to 6 inches by 2 inches, and billets from 10 inches to 1½ inches square, all with planed face, so as to show their solidity and soundness. Not a pipe or blow hole could be seen. Tests have been taken for analysis from the center of whole casts of ingots when being worked into billets, and they have been found practically the same. Tests are taken regularly in this way and tested for carbon, and out of some hundreds there is scarcely a trace of difference.

Table No. 3.

Analysis.	Dimensions of test piece.			Breaking strain.		Extension.	Remarks.
	Width.	Thickness.	Area.	On piece.	Sq. inch.	On 8 inches.	
				Tons.	Tons.		
Carbon..... 0.10	2.38	0.15	0.357	7.8	22.1	29.5	x Bends.
Silicon..... .....Trace	2.40	0.16	0.384	8.31	21.6	29.5	x Good.
Sulphur..... .. 0.035	2.39	0.21	0.501	11.3	22.5	30.0	x Good.
Phosphorus..... 0.045	2.40	0.17	0.408	9.1	22.3	32.0	x Good.
Manganese..... 0.56	1.51	0.345	0.52	12.9	24.8	28.0	Good.
	1.55	0.38	0.58	14.6	25.1	25.0	Good.

Much has been said respecting the best design of furnace for working this process. Some prefer elliptical, others the Batho round furnace, but having had charge of both, gaining an experience long to be remembered, I would prefer the Hilton furnace for many reasons.

The Hilton furnace is an ordinary rectangular furnace incased in iron and carried on girders supported by columns, and is, therefore, left entirely clear underneath, which insures the bottom being kept cool and lessens the likelihood of the charge breaking through. It is in communication with gas regenerators by a tube at each end that conveys the gas to a bifurcated passage terminating in the two parts opening into the combustion or melting chamber. There are also two air regenerators, each in communication by a tube and passage with a transverse chamber from which the air descends through three inclined ports into the combustion or melting chamber, and the inclined ports, being ranged above (so as to alternate with) the gas admission ports. By the described arrangement these parts of the furnaces, which in some constructions heretofore usually adopted have entailed much trouble and expense, are made exceptionally strong and better able to resist the intense heat and cutting action of the flame, the gas and air are thoroughly mixed so that sufficient combustion is obtained throughout the width of the furnace, and the gas entering the furnace is caused to impinge directly.

It will be understood that the operation of the furnace is similar to that of open hearth furnaces of ordinary construction. A 30-ton Hilton acid lined furnace such as I have described is capable of making 9 or 10 charges of acid steel per week, thus making from 250 to 300 tons of ingots suitable to pass Lloyd's or any other requirements; these Hilton furnaces have worked without repairs, practically speaking, 24 weeks, then only shut off for cleaning out checkers. Gas is taken off on the Saturday, the checkers are all taken out and in again, the furnace is heated up, and four charges are made all in one week. This can be done without cooling with water, which is very detrimental to this class of brickwork. With proper treatment a furnace will make 12,000 tons before it must be rebuilt. The furnace I would recommend for basic open hearth working is a Hilton furnace of 20 tons capacity.

Important coal developments are being made in Western Virginia, as the result of excavations made by engineers who are running a railroad through Boone County. On the face of a mountain on the Pond Fork of Coal River, where but two veins of coal were supposed to exist, the engineers developed the outcrop of no less than 11 veins, aggregating 68 feet 11 inches. One vein is cannel coal, 42 inches thick, another has 34 inches of cannel coal overlaid with splint coal, and another vein of bituminous coal is 20 feet thick, with two feet of "parting" 7 feet from the bottom. This gigantic seam thus presents 18 feet of clear, solid coal of the best quality. The Pocahontas veins have been traced from the head of the Guyon River through several counties, and through the entire section coal is found in abundance. Its proximity to the iron ore fields gives promise of great industrial activity in this region in years to come.

Complaint comes from Massachusetts that undesirable immigrants are crowding trades and depressing the wages for labor.

Marking Imported Goods.

The Secretary of the Treasury has issued the following instructions to customs officers in regard to the marking, stamping, branding, &c., of goods and packages imported after March 1 next, under Section 6 of the Tariff act:

1. While only such goods or articles of foreign manufacture as are usually or ordinarily marked, stamped, branded or labeled are required to be so marked, &c., on and after the 1st of March, 1891, yet it will be observed that all packages, outside or other, containing any imported merchandise, must be so marked, &c., to entitle the contents thereof to entry at the Custom House.

2. In the case of champagne wines, mineral waters, &c., in labeled bottles, the law will be substantially complied with if the outside packages are marked with the name of the country of origin.

3. In the case of small articles, which cannot be readily marked, the marking of the inside cartons and outside packages will be sufficient.

4. Sheets of zinc, tin plate and similar articles, which are not usually stamped, except to indicate gauge, &c., may be admitted to entry if the packages containing the same are marked, stamped, &c.

5. In the case of bottles with more than one label, containing imported goods, the law will be complied with if but one of the labels thereon bears the name of the country of origin.

6. The prefix "from" placed before the name of the country of origin, as for instance, "from France," "from Germany," is not essential, the law requiring simply the name of the country of origin to appear.

7. In the case of marking of bags containing muriate of potash, guano and other like articles where the marks are likely to become obliterated owing to the goods absorbing moisture while on the voyage of importation, the sweating of the bags and handling, &c., before reaching destination, it is held that, as the admission to entry of such goods on and after March 1, 1891, is dependent upon their being plainly marked, &c., the shipper, importer, consignee or agent should see that such marking shall, by some one of the means required by law, appear indelibly on the bags at the time of importation.

8. Labels, &c., specifying the place of manufacture, and not the country, as, for instance, "Paris," "London," "Berlin," &c., do not comply with the law, and such name of the city of origin, in addition to the name of the country of origin, is not necessary.

9. In the case of watches, which are ordinarily stamped, &c., the name of the country's origin should appear thereon; and it is held that in the case of such importations, from Switzerland, for instance, the word "Swiss" will meet the requirements of the law.

10. Fire brick and other like rough articles imported in bulk need not be marked.

11. Goods coming from England, Scotland, Ireland and Wales may be marked "Great Britain," but goods marked "England," "Scotland," &c., would not be excluded. It is held, however, that the name of the mother country of origin appearing on goods instead of the names of kingdoms, States or divisions of countries, would more closely meet the requirements of the law.

12. Wool and other articles produced in the East Indies shipped from ports in Europe should be marked with the names and the countries of origin.

13. In the case of musical instruments, physicians' supplies, chemical apparatus, and other similar articles which are usually packed in cartons, it will suffice if the cartons and outside packages containing the same are marked with the name of the country of origin.

14. Articles and packages may be marked either by stamping, branding or labeling, as the party may choose.

15. In the case of pencils, steel pens, tooth brushes, licorice stick, common crockery, &c., the law will be complied with if the cartons and packages containing the same are marked.

16. Lead and tin in pigs, which is ordinarily and usually marked, &c., should also be marked with name of the country of origin.

17. Unmanufactured substances need not be marked, but, when contained in packages, the package should be marked, &c.

18. The law does not require the name of the importer, shipper or maker to be marked, stamped, &c., on imported articles or packages.

19. Marking stenciling with indelible material would be a compliance with the law.

20. It is held that the word "Scotch," appearing on goods coming from Scotland, would be sufficient under said provision.

21. In the case of kid gloves the law will be complied with if the name of the country of origin is made to appear on the bands surrounding a number of pairs of gloves, and not on each individual glove.

22. The placing of labels on anvils and other like articles, giving the name of the country of origin, the abbreviation "Eng." as indicating England; the placing of the name of the country of origin on bands inclosing bundles of metal bars, would be admissible under the law, and goods coming from any of the islands of the West Indies may be marked "West Indies."

Lathe Dog.

The time required to adjust the old style lathe dog to work of various sizes, and the fact that it has to be placed in position before centering, have always caused annoyance and loss of time. The lathe dog here illustrated is designed to overcome these objections. It can be attached to the work after the work has been centered, and it can be used as well between collars as upon plain or straight work. A large dog can be used on a light mandrel where the work is large in circumference, and it can also be used for locking work on the mandrel in case of it slipping. It is claimed by the makers of this dog—Palmer, Cunningham & Co., Limited, of Philadelphia—that one set of three of these dogs will do the work that usually requires from 10 to 12 of the old style of dog.

THE "INDISPENSABLE" LATHE DOG.

The Fort Payne Coal and Iron Company.

President Spaulding of the Fort Payne Coal and Iron Company has sent an appeal to shareholders for a loan of $5 per share to the company on a year's time at 8 per cent interest, and W. P. Rice seconds the appeal in a supplementary circular, emphasizing the urgency of the situation as set forth by the president. Below are the circulars:

BOSTON, MASS., December 17, 1890.

To the Stockholders: On the 6th inst a statement exhibiting the condition of the company was sent to every stockholder, and a request was made to each to come to the relief of the company in some one of the ways therein indicated. Only a few responded to the request, and communications and interviews with others indicate that the impression obtains quite generally that the threatened disaster to the company will somehow be averted by the directors, or others interested, and the valuable property saved without individual action.

I regard it a duty to warn all interested of the impending danger, and that it is real and immediate. To avert this and secure an amount sufficient to provide against any and every emergency, I feel that I ought to make a personal appeal to every stockholder to loan to the company, on one year's time at 8 per cent. interest, $5 a share on every share he now owns; and I earnestly hope that each one will make such a loan, or procure it from some friend, within 48 hours after receiving this appeal.

There can be no question but what each and all of these loans will be absolutely safe. The company own without incumbrance what has cost in round numbers $2,000,000, and what is now worth much more than that, while their total liabilities are considerably less than 10 per cent. of that amount.

The present management have exerted every effort and all their ability, collectively and individually, to raise the necessary funds without troubling the stockholders. Under ordinary circumstances and in the usual condition of monetary affairs, it could have succeeded, undoubtedly; but I repeat, with emphasis, the management have resorted to every means and exhausted every resource at their command to procure the necessary means without avail.

It has been suggested, and I think the suggestion a good one, that prior to the next annual meeting in February should be an informal meeting of the stockholders at some central point in New England, say at Boston, at

which nominations could be made for a board of directors for the ensuing year, and a committee chosen to receive the proxies of those unable to attend the meeting at Fort Payne. I know I voice the sentiment of every director when I say that personal feeling should not prevent the stockholders from securing a board of directors at the next meeting who shall be entirely acceptable to them in every particular.

An opportunity will be afforded to the stockholders at the annual meeting to decide whether or not it seems to them desirable that the indebtedness of the company should be secured or funded, by an issue of bonds upon the property of the company.

I hope each stockholder will fully appreciate the danger and realize the necessity of personal action. The interest at stake is a large one. The property is of great value and holds out the promise of large future returns. I trust that I shall be pardoned when I say that it seems to me it would be a fearful shame to allow misfortune to come to the company, under the circumstances. If I had or could control the means, I would unhesitatingly advance the amount required for the succor of this corporation, though the requirements were several times as large as they are.

Each stockholder is requested to reply to this at once, either to myself or one of the vice-presidents, address as above; and each one should now understand that the responsibility rests upon him.

J. W. SPAULDING, President.

Mr. Rice's circular reads:

BOSTON, December 17, 1890.

To the stockholders of the Fort Payne Coal and Iron Company: Col. Spaulding, president of the company, has issued a personal appeal to the stockholders, that they individually loan the company $5 per share on every share of their present holdings of stock, in order to relieve the company from their present financial embarrassment.

I wish to state personally that I indorse his request, and that I know that it is a necessity for the stockholders to accede to it. The thorough investigation that I have made during the last four months, as to all matters in Fort Payne, convinces me more positively than ever of the great value of our property there. The statement which has been furnished to all the stockholders should convince them that the stock of the company is exceedingly valuable and that such a loan would be perfectly safe, and that it would be very unfortunate for the company to have any financial difficulty, simply on account of the present condition of the money markets of the country.

I have personally exhausted all my resource, to assist the Coal and Iron Company, and am unable to do more. I mention this because I am very largely interested in Fort Payne, and many of our friends may feel that I will find some method of relieving the company of their difficulties, whether they assist or not. Every stockholder who is personally acquainted with me knows that I would do so if it were possible, but because of the extreme and unlooked for stringency of the money market, I have been unable to carry out plans which I wished to consummate, and have made up my mind that our only recourse is to call upon the stockholders for their proportional share of the amount we need to put us into safe condition, and I urge every stockholder to comply with Col. Spaulding's request, and to do so immediately.

Yours respectfully,

W. P. RICE.

The British Government is said to have made overtures for the negotiation of a commercial treaty between the United States and the colony of Newfoundland. Acting on this information the Boston Chamber of Commerce has memorialized Congress on the subject, asking for the free interchange of certain specified products of the two countries, also certain privileges relating to trading and fishing. As Newfoundland is one of Canada's best customers it is intimated that the Dominion Government will protest against any such arrangement. New England representatives in Congress have not yet spoken.

Incident in the Life of a Locomotive.

The engravings which accompany this are from photographs sent to us by George A. Haggerty, mechanical superintendent, New Brunswick Railway Company, and represent some of the vicissitudes of a locomotive which are not altogether peculiar to that road. In this case the engine ran over a cow and was thrown down a 60-foot bank, landing nearly bottom up at the edge of deep water in the river St. John, within the city limits of Woodstock, N. B. To rescue the engine from this position, a track was graded obliquely down the bank, and the locomotive was then turned bottom up on trucks, as shown. The trucks carrying it were hauled up the track by cables, and the engine was then hauled to McAdam Junction, a distance of 60 miles, at a speed of 15 miles an hour.—*Railroad Gazette.*

The miners in the district in Central Pennsylvania shipping to Eastern and tidewater markets have formulated a series of demands, the principal of which is that they be paid 50 cents per net ton, instead of 50 cents per gross ton, as at present. They threaten to strike on January 1.

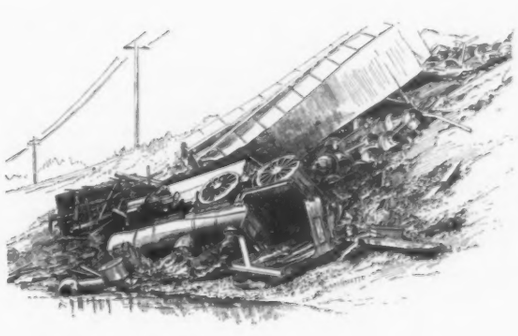
Two 1000-ton steel steamships for the Minnesota Steamship Company are nearly ready for launching at South Chicago. They represent the first season's work of the new shipbuilding company located at that point. The vessels as they now stand are 308 feet in length over all, with a keel of 292 feet. The beam is 40 feet and the depth 25 feet. At present they do not contain a single stick of timber, so that the traditional ship carpenter would seem to be without an occupation. The main deck, however, will be floored with lumber, and the hold ceiled with the same material. The keel and bottom will be almost flat, with full rounding sides, like the average vessel built for lake service. The skin, or outside covering, is plate iron varying from $\frac{1}{2}$ to $\frac{1}{4}$ of an inch in thickness. There are 12 tons of plates on each side, or, as they are termed, 12 strakes. The keel strake and top strake will be of $\frac{1}{4}$-inch plates. The vessels when complete and ready for delivery will have cost $210,000. The carrying capacity of each will be 2500 tons. They are being fitted for the Lake Superior iron trade. Each will have 8 hatches. The plates and angle irons at present come from the East, but will soon be furnished from the Illinois Steel Company's plant at the mouth of the Calumet River, where open hearth steel works and plate mill are well advanced.

The London Underground Electric Road.

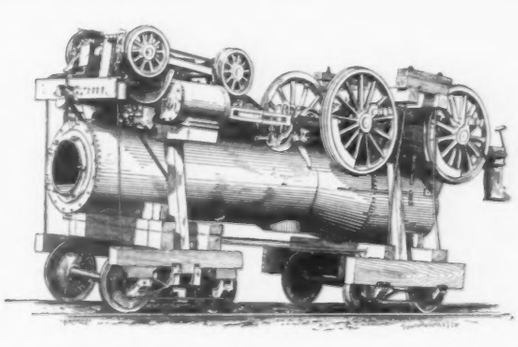
The drawbacks of underground travel on roads operated by steam have been brought home forcibly to every one who has traveled in London. It has been the usual rejoinder of Americans when called upon to defend the unsightly elevator structures to justify them by the experience in London. Recently, however, that metropolis has acquired a new method of travel which is robbed of the disadvantages alluded to by the adoption of electricity as the motive power.

The City and South London Railway was recently finished, and it is expected that in a few weeks the regular passenger traffic of the road will commence.

This railway is in a subway or tunnel, passing from King William street, London, under the Thames to Stockwell. The line has been constructed in the form of two circular iron tunnels 10 feet in diameter, driven through the London clay and about 60 feet below the surface. The method of working resembles the sinking of a caisson. A steel shield was forced forward while material was excavated. When a sufficient advance had been made a ring of cast iron plates was built up, and a lime grout was forced into the space left by the sides of the shield between the lining plates and the soil. A speed of 16 feet per day was attained. Near the Stockwell terminus an old water course, consisting of gravel with a considerable quantity of water, was encountered. The air lock principle, for which this system was excellently adapted, was employed. The water flow was kept back for weeks upon weeks by the sheer force of volumes of compressed air. After some delay in providing the necessary machinery, which it was hoped might have been unnecessary, the tunnels were satisfactorily completed. These tunnels were made in 400 yards length, 200 yards being driven from each face, and meeting like lengths driven from other faces. The extreme divergence of the junctions amounted in one instance only to $\frac{1}{4}$ inch, and others not exceeding $\frac{1}{4}$ inch, although the datum levels had to be transferred from the bottom of the shafts, which now contain the lifts, to the centers of the lines of the tunnel, as the shafts were all on one side or the other of the line of railway. The rate of excavation was often as much as 16 feet per day, the average of the working days being 13 feet 6



He Went Into a Far Country.



The Prodigal's Return.

inches advance of heading. At the present time the rails of the road are laid, the platforms erected, and the neatly constructed underground stations, with their walls lined with white glazed tiles, are ready for passengers, and have a cleaner and brighter aspect than any of the other underground stations in London. Moreover, they will not be sullied with smoke and dirt from steam locomotives.

The scheme to work this railway by electricity to avoid the use of steam and its noxious results, or the use of rope traction with slow speed and other disadvantages, was submitted to the City and South London Railway Company by Mather & Platt, engineers, Manchester, and the company accepted the idea. The whole electrical plant has been constructed under the special superintendence of Dr. Edward Hopkinson, who has acted throughout as consulting engineer, with G. A. Grindle as resident engineer.

The following description of a few of the details of the work, from the London *Electrical Review*, will be of interest:

The whole of the machinery for generating the electrical current is situated at Stockwell, the suburban terminus of the line. At this point a complete plant has been erected for the generation of the electrical current. There are three large dynamos of the Edison-Hopkinson type, each worked independently by a vertical compound engine, designed and constructed by John Fowler & Co.

The engines work at a steam pressure of 140 pounds per square inch, and have been built of exceptionally massive proportions. They run at 100 revolutions per minute, giving a piston speed of 450 feet per minute. They are fitted with automatic expansion gear of improved type on both the high and low pressure cylinders and are controlled by a powerful governor, which is driven direct from the crank shaft by cotton ropes, the automatic gear being so arranged as to cut off the steam if necessary in both cylinders from dead cut off to three-quarters of stroke. The engines will indicate up to 375 horse-power each. The cylinders are steam jacketed, the high pressure is 17 inches diameter and the low pressure 27 inches. The valves are specially fitted with multiple ports, which reduces their movement considerably and still gives a very prompt action. The fly wheels are 14 feet diameter and 28 inches broad, and drive the dynamos direct by means of leather chain belts 26 inches wide.

The engines are supplied with steam from six Lancashire boilers, 7 feet diameter by 28 feet long, which are fitted with mechanical stokers. Two large feed water heaters are also supplied, with brass tubes of ample surface for receiving the whole of the exhaust steam from the engine without back pressure.

Edison-Hopkinson dynamos are fitted with bar armatures. The weight of the armature alone is about 2 tons and the weight of entire machine something over 17 tons. Each machine is capable of generating 450 volts and 450 amperes. The commutators are of hard copper insulated with mica. The magnet limbs are exceedingly massive, each limb, with its pole piece, being over 4 tons, and the yoke of the machine weighs about 3 tons.

The machine can be run as shunt or compound only, as required. The total weight of copper wire on the magnet of each machine is nearly 1½ tons. The present machines have, it is claimed, an electrical efficiency of 96 per cent., and the measured efficiency of the engine and dynamo—*i. e.*, ratio of the electric power available outside of the dynamo to the indicated horse-power of the engine—is over 75 per cent.

Sir William Thomson's multicellular electrostatic volt meters are used for measuring the electro motive force. The current from the dynamos is conveyed to a general distributing and testing switchboard fixed in a recess of the engine house.

The site occupied is a plot of about 2 or 3 acres on the surface or ground level. The access between this depot and the subway is by a curved tunnel descending from above ground by a steep incline of 1 in 3½ feet. Up and down this the trains are brought or lowered by a rope and winding engine. This short bit of tunnel is remarkable. Formed on a horizontal radius of 250 feet and a severe vertical radius, it is marvelous that the junction of the two drivings, one from below and the other from above, should have met center for center and level for level within an inch or two. At the depot the carriage shed is large enough to contain six trains side by side.

The main cables for the road consist of a copper core of 7i | 14 B. W. G., insulated with Fowler-Waring patent insulating material and lead sheathed.

The working conductor is of channel steel, carried on glass insulators, the joints being fished, and also connected with copper strips. The steel employed is of very high conductivity and has been rolled especially for the purpose. The working conductor is divided into sections for convenience of testing and carrying out repairs on the permanent way. The insulation obtained, it is stated, is extraordinarily high. When the full pressure of 500 volts is on the complete system of working and feeding conductors, the leakage current does not exceed 1 ampere, so that the total loss by leakage is less than 1 horse-power; this is a small fraction of 1 per cent. of the total power required for working the line to its full capacity. The current is collected from the working conductor by sliding shoes of iron or steel.

Fourteen 10-ton electric locomotives have been supplied by Mather & Platt for working the line, each capable of developing 100 effective horse-power and of running up to 25 or 26 miles per hour. The armatures of the locomotives are constructed so that the shaft of the armature is the axle of locomotive; in this way all intermediate gear and all reciprocating parts are entirely obviated. A moter is fitted on each axle, the axles not being coupled, but working quite independently. The current is conveyed from the collecting shoes through an ampere meter to a regulating switch; thence to a reversing switch; thence to the magnets and back through the framework of the locomotive to the rails, so completing the electrical circuit. The locomotives are fitted with a Westinghouse automatic air brake and also a screw hand brake, and they are lighted from the working conductor. The train, when loaded, will weigh 30 tons, and it is intended that ten trains shall be worked on the line at one time. A train consists of an electric locomotive and three passenger carriages, 32 feet in length from end to end of the footboard. The long passenger carriages are pivoted on two four wheeled bogies, and the interior, which is divided by a door in the center, contains seats for 34 persons. The inclosed portion is 28 feet in length, the external overhang of the carriage platform being coupled up to the similar overhang of the adjoining carriage, and thus forming two open platforms between the three carriages. Upon each of these a guard travels with the train. These guards' platforms are protected at the sides by iron lattice sliding doors. The carriages are lighted by electric light, the current for the lamps being in like manner taken off from the conductor.

Each train carries its own reservoir of compressed air, sufficient for 40 stoppages, and as it arrives at the depot station of the line recharges its air supply. The trains are also fitted with hand brakes, the stopping power being thus completely independent of the motive power. Block signaling has been adopted. Should, by any failure of the engine at the station, or any other cause, the train be brought to a standstill, passengers could leave the tunnel safely, as a passage 2 feet wide is provided clear of the rails, and at no point could the distance to be traversed exceed ⅝ of a mile.

In the generating house is the hydraulic machinery for supplying power to the lifts at the various stations. The cylinder of the ram is 2 feet in diameter, and the wrought iron flange jointed pipes, which convey the water at a pressure of 1200 pounds on the square inch, are nearly a foot in external diameter. The engines which pump the water into them act automatically, being put in motion as the accumulator descends by loss of water at the lifts. At the end of this building is a locomotive repairing shop, with special appliances for lifting out or replacing the dynamos on the locomotives.

For the numbers of business men, clerks and employees coming daily into the city it will be a great boon to be conveyed at a speed of at least 12 miles an hour, the journey from Stockwell to King William street occupying 15 minutes, instead of three-quarters of an hour as at present by omnibus. Ultimately the trains will follow each other at 3-minute intervals, but at the commencement of the traffic they will start about 7.30 A.M. and run every 5 minutes. The stations are lighted by gas, and for the water supply of the steam boilers, which is taken from the water company's mains, there are two large tanks, one of 12,000 and the other of 25,000 gallons, as a reserve.

Connellsville Coke Reduced.—As announced in our issue of the 25th ult., the price of Connellsville Coke has been reduced 25 cents per ton, to go into effect on January 1, 1891. This will make the price of coke to furnace operators $1.90 per ton, the price for some months past having been $2.15 per ton. This reduction was made in answer to the request of the furnace operators of the Mahoning and Shenango valleys for a reduction of 40 cents per ton. The prices at which pig iron has been selling for some past has left but little, if any, profit for the producer. As showing the low prices ruling at present, we can state that a Pittsburgh furnace recently sold 4000 tons of Bessemer, delivered in Wheeling, W. Va., for $15.90 per ton. As the freight is 90 cents, the iron netted the furnace $15 per ton. As yet no answer has been received from the railroads as to what action they propose to take on the request of pig iron manufacturers of the Mahoning and Shenango valleys for a reduction of 20 cents per ton on the freight rate on coke from the Connellsville region to the valleys. A reduction of 15 cents per ton on pig iron from the valleys to Pittsburgh, and a uniform rate of 25 cents per ton on limestone from any of the quarries to the valleys, was also requested. In view of the reduction that has been made in the price of coke, and from other information in our possession, we believe it perfectly safe to state that these requests will be granted, in part at least. In all probability an answer will be received from the railroads during the present week.

An interesting relic of the great fire of 1871 has just been unearthed in Chicago in preparing for the foundations of the new Masonic Temple. The site of Hall & Kimball's iron warehouse was at this point at the time of the fire, and their stock of bar iron melted and imbedded itself in the earth. In excavating for new foundations a mass of this iron, estimated to weigh 28 tons, has been uncovered.

THE WEEK.

Eleven battle ships, with an aggragate displacement of 70,000 tons, are now being built for the German Government—three at Bremen, two at Gaarden, near Kiel, one at Wilhemshafen, three at Dantzig, and two at Bredow, near Stettin.

The Colombian Government is reported to have renewed the concession for the construction of the Panama Canal, the consideration being $2,000,000 in cash and $1,000,000 in preferred stock. The canal company, however, is supposed to beyond resuscitation.

Americans are buying more sugar plantations in Cuba.

The various labor organizations are preparing to make a formidable demonstration in the New York Legislature against convict labor. The trades unions regard the three systems, known respectively as the contract, piece price and public account, as alike objectionable, because all these methods place manufactured products in the market, instead of supplying penal or charitable institutions exclusively.

A dispatch from Lima, Ohio, says that the Ohio Oil Company, the land department of the Standard Oil Company, have increased their capital stock from $5,300,000 to $8,000,000.

European traders have news of the opening to foreign traffic of the river Chung-King, thereby making accessible many populous cities in China where an outlet for merchandise may be found.

The cable railroad system in San Francisco has a double track railroad 54 miles in length, and is claimed to be the most perfect in the world. Every car is provided with a dummy which can easily carry 15 persons, and permits them to ride in the open air.

Architects are much interested in the progress of the double stairway of grand proportions which will grace the west end of the capitol at Albany, and is called the most beautiful in America. It was designed by H. H. Richardson of Boston, and is built of red Medina sandstone and red Scotch granite.

Natural gas coming across the Niagara River from Canada cannot be admitted free of duty, being a merchantable article and "wholly different from electricity."

Costa Rica now has a railroad from the capital to the sea, realizing a long felt want.

President Harrison proclaims that all preliminary conditions having been complied with in accordance with law, the World's Columbian Exposition will be opened at Chicago May 1, 1893.

In prospect of a general upheaval of Broadway next spring, preparatory to laying a cable road, property owners regard the occasion opportune for the construction of a single tunnel or subway of a capacity sufficient to admit all the 11 separate underground pipes that now extend the entire length of that thoroughfare and require constant repairs. There are five gas mains, two for water, two large electrical ducts, two sets of steam pipes, a subway for pneumatic tubes and a sewer. It is contended that all should be compelled to use a common subway.

An agreement for the establishment of sea post offices on the steamship lines between New York, Bremen and Hamburg has been forwarded from Washington for the approval of the German Government.

The city of Denison, Texas, promises to become a central point for the distribution of coal from the fields of the Choctaw Nation, 12 miles distant, in close proximity with deposits of hematite and magnetic iron ores. Mayor Collins of Denison says there are already projected steel works which will cost $2,000,000. The New York syndicate who own this plant are also owners of the Denison and Washita Valley Railway, which runs through 600 miles of coking coal fields in the Indian Territory.

The establishment of an Emigration Commission in Boston in all respects similar to that in New York is said to be assured.

The Lima, Peru, Chamber of Commerce wants closer steamship communication between New York and Aspinwall to correspond with service on the Pacific side.

The reduction of coal miners' wages in Belgium threatens serious disturbance.

Buildings recently erected in San Francisco are strengthened with steel to protect them from damage by earthquakes. The new *Chronicle* building is only 47 feet wide, yet it is 185 feet from sidewalk to roof, but so firmly welded together is the frame by bands of steel that a heavy shock of earthquake last July, just after the building was completed, did not cause the slightest damage.

Experiments made with a smokeless powder manufactured at the United States Torpedo Station at Newport, R.I., show a high explosive power, 10 grains being sufficient to drive a bullet into a pine board to a depth of 20 inches, while 70 grains of service powder can make the missile penetrate but 14 inches.

Port Orchard, on Puget Sound, is recommended by the Government Commission as the best site for the proposed dry dock and naval station on the Pacific Coast. The depth of water is 14 fathoms.

The Bolivian Government is considering a proposition by a European syndicate for the construction of a railway system intended to develop the natural resources of the republic.

Montreal papers find little that is satisfactory in the Canadian bank statement for November. There was an increasing pressure for accommodation on the part of mercantile borrowers. The currency expansion, however, has not been equal to that of several preceding years, showing that domestic commerce has not enlarged. The extension of credit continues unabated, in spite of repeated cautions. The indications are that a firm money market will prevail through the winter.

A summary of shipbuilding in Maine during 1890 shows 121 vessels constructed, with an aggregate tonnage of 68,211. There were five steamers, four ships, one bark, seven barkentines, 89 schooners and 15 sloops. No brigs have been built in Maine since 1883, and that rig is apparently a thing of the past.

A number of capitalists, foreign and American, have organized a company to build steel cars in Chicago, for the transportation of live cattle from the Western ranges direct to Philadelphia, where immense abattoirs will be erected.

The Australian colony Victoria is engaged in the development of an extensive system of irrigation. The first important work completed in the "Soulburn weir." The weir itself is a massive structure, nearly 200 yards wide, with wings 100 feet wide on each side, and with a hight of 38 feet of solid masonry, above which are iron flood gates 10 feet high. The masonry and concrete of which the weir is composed are founded upon the solid rock bottom of the stream, and its width at base nearly equals its hight. It contains 14,500 cubic yards of concrete, 85,000 cubic feet of dressed masonry and 400 tons of iron. Its storage capacity is 50,000,000,000 gallons of water, which will be turned into side channels and irrigate a district nearly 40 miles long on one side of the stream and 60 miles long on the other. The principal channel is 7 feet deep and 110 feet in width, and will discharge 100,000 cubic feet of water per minute. The result of this elaborate and costly experiment will be watched with profound interest in all parts of Australia.

The "Galilee coffee house" for workingmen has been opened in East Twenty-third street, on the plan adopted by similar institutions in London, and there are strong reasons for the extension of the system throughout the city.

Two farmers' organizations in Illinois, through their chief executive officers, have filed information with the Attorney-General of the State that the newly formed Chicago Live Stock Exchange is a conspiracy and unlawful combination designed to coerce producers to send their cattle exclusively to members of the exchange. There is a prospect of business for the courts.

The Trunk Line Association are averse to the proposed new uniform classification of railway freights, causing much disappointment in the West. The classification is the result of two years' labor and had been adopted by every traffic association in the country except the transcontinental and the trunk line. Everybody anticipated a hearty ratification by the trunk lines and an early adoption throughout the country.

Dredging machines will shortly commence the stupendous work of removing 25 acres in the Delaware River, opposite Philadelphia, comprising what is known as Smith's and Windmill Islands. The required depth of water is 26 feet, so that the quantity of material to be dug out between Knight's Point and Fisher's Point is about 17,000,000 cubic yards. The work will be completed in two years and a half.

The Mexican Government has issued a circular notifying the Governors of the several States, and also the organization known as the Commercial and Industrial Confederation of Mexico, to send delegates to a Conference in the City of Mexico on February 5, 1891, for the purpose of devising some plan for the abolishment of indirect taxes and import charges levied by the different States and municipalities of the country. The object is to secure one uniform system of taxation upon merchandise throughout the whole republic.

The latest novelty in ocean freights is the transportation of molasses in bulk, tank steamers being used for this purpose such as have been employed in the petroleum trade. It is reported that John Ward & Co. have chartered two steamers of this character to carry molasses in bulk from Cuba to the United States at 14 shillings per ton, which is extremely low, as according to the ship brokers it will result in a saving to the cargo owner of at least 50 per cent. There will be no expense for cooperage and dunnage, and stevedores' fee will be done away with, along with a host of incidental expenses.

It is estimated that at least 10 new battle ships are needed to place the United States on even a fighting par with European powers. These 10 ships can, if authorized during the present session, be completed and commissioned by 1894.

Despite the restrictions on the American cattle trade in British ports, imports during the year from the United States comprise about 123,000 head, valued at $8,750,000. Not only are English farmers alarmed, but Canadians declare that their trade is in peril and must have further privileges.

The Iron Age

New York, Thursday, January 1, 1891.

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RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

REMOVAL.

The publishing and the editorial offices of *The Iron Age* have been removed from 66 and 68 Duane street to more commodious quarters at 96–102 READE STREET, between Church street and West Broadway.

Cheap Steel.

The developments of the past few weeks in the soft steel trade are of the greatest importance to a number of lines of manufacture and to the men who handle the goods. Bessemer steel billets have certainly sold in the Pittsburgh district at a shade under $25.75, and it is reported that as low as $25.50 has been touched under special circumstances. It is understood that large contracts have been placed at the range of $26 to $26.50 for delivery during the first quarter, and that some of the works have been left behind in the race for orders. It must not be forgotten that the supply has been largely increased of late by the dullness in the rail trade, which has forced converter capacity in the soft steel trade, and that the diversion of the Allegheny Bessemer Steel Company into the trade has emphasized this tendency.

The question naturally arises whether the prices now ruling are safe to buyers, whether they are so low that they cannot long be maintained, or whether there is still a margin which may be wiped out by continued competition for work. The question of cost is, of course, the first factor which needs consideration, although experience has shown that under certain circumstances even that ceases to be the controlling factor. We present below an estimate of cost based upon the actual figures covering a year's work in the Pittsburgh-Wheeling district:

Converting.

Pig iron	$16.00
Loss, 15.25 per cent	2.44
Labor	1.75
Ingot molds and stoves	.40
Manganese, refractories, limestone and fuel	2.50
Cost of ingots	$23.09

Blooming.

Ingots	$23.09
Labor	1.10
Fuel	.75
Maintenance and repairs	.25
Cost of 4 x 4 inch billets	$25.19

It will be observed that the basis of this estimate is a cost of $16.00 for pig iron, which is very low for those establishments who must depend upon the open market for their supply. Possibly some of the works who make their own iron may be able to do a shade better. A glance shows, of course, how preponderating pig iron is as an item in the cost, particularly when the loss of 15.25 per cent. is added. Since the furnaces must run until the opening of navigation on this year's ore, which is very high in price, considering the pig iron market, and since only a small reduction has been made in the price of coke, the price of $16.25, delivered, is exceedingly low. Should the Valley furnaces decide to blow out or bank this price could not rule long, although resales of ore might give other furnaces greater advantages.

Reductions in the labor items would affect the question but little, so that it is quite clear that the price of 4 x 4 billets is so close to cost that there is little danger in purchasing at prevailing rates. Any further lowering would very soon reduce the supply practically to the output of those concerns who have exceptional advantages in the matter of cheap pig production. On the other hand, the consumption would be rapidly stimulated by even the low prices now current for billets when comparing them with the market for muck bars. Possibly the latter might be purchased in the Pittsburgh district to-day at $28.50. It is not safe, however, to assume that figure, since it is generally estimated that mill iron can be converted into muck bar for $11.50 to $12. This would put its cost at $26.50 to $27. It is evident, therefore, that it might pay iron rolling mills to purchase billets, rather than run their own puddling mills, if their rolls are strong enough to work steel.

The conclusion seems warranted, therefore, that steel billets are now so low that very little of a decline need be feared. The matter is one which, as we have said, is far-reaching for other lines of business. Steel billets and slabs are the raw material for the cut and wire nail, barb wire and market-wire manufacturers. They enter largely into the production of bars, structural material, railroad spikes and fish plates. Their price affects indirectly the whole line of higher grades of plates and sheets. In all lines in which productive capacity is large, as in cut and wire nails, barb wire, railroad fastenings, bars, &c., the effect of low raw material will be quickly felt. In fact, in at least one important industry, the wire nail trade, the future has been thoroughly discounted. Leading jobbers in the principal distributing markets have purchased for cash very large quantities at $2 per keg, base sizes, which is below the actual cost of production, even for those who have their own rod mills and can convert billets into rods at $9 or even a shade less.

Until navigation again opens, and the furnaces can get new ore at the lower price which it is confidently expected will rule then, present prices for soft steel seem safe, unless there is a very much greater reduction in the cost of coke. According to our telegraphic advices last week that reduction has been 25 cents per ton. A further lowering can only be the result of a very much reduced production of pig iron in the territory tributary to the Connellsville field, a cause which now seems unlikely to become a factor in the situation.

Surplus Convict Labor.

The subject of convict labor is to be stirred up anew at the coming session of the New York Legislature, the operation of the law now in force designed to regulate the employment of such labor in our penal institutions being unsatisfactory to the trades unions. The gravamen of their complaint is that the products of prison labor, despite all preventive efforts that have been made in successive legislatures, find their way into the general market and are sold in competition with "honest labor." In amending the laws at various times to meet the supposed popular requirements almost all known devices have been resorted to in turn, such as the "contract," "piece-price," "public account" and "lease" systems, and either one of these, with or without auxiliary machinery, as the case might be, but always practically with the same result—viz., the manufacture of surplus products which must be sold, and therefore to a greater or less extent put in competition with articles already in the market from the various trades. The trouble, in short, appears to be how to employ labor without any tangible result. One of the first effects of these endeavors was to consign a large number of prisoners to a condition of idleness, from which an undue proportion emerged only to enter the hospital or asylum for the insane, besides creating a heavy deficit in the State funds to be made good by general taxation. In other words, prolonged idleness has been demonstrated beyond a doubt to be pregnant with mischief so far as concerns the physical and moral status of the individuals affected, at the same time that a former handsome surplus of revenue has been converted into a deficit.

In the year 1886, as the result of the expiration of contracts at that time, or the failure of the Legislature to provide for their employment, no less than 26 cases of insanity occurred among the inmates of Auburn Prison, as against six during the preceding year, under more favorable auspices. Ostensibly to devise a remedy for acknowledged defects, but in response to the clamor of demagogues as some people affirmed, the law of 1888 was enacted, which provided that "no machinery or power of any kind for manufacturing purposes shall be used in any penal institution of the State, and no person in such institutions shall be required or allowed to work while under sentence therein at any trade or industry where his labor, or the production or profit of his labor, is farmed out, contracted, given or sold to any person. The Superintendent of State Prisons shall cause to be manufactured all articles commonly needed in public institutions of the State, and all articles manufactured and not required for

use therein shall be furnished to the several institutions supported in whole or part by the State."

Theoretically, the abolition of machinery would give full scope to surplus muscle in filling the hiatus, and the market at the same time would be relieved of surplus production. As before, it happened that the labor element represented by trades unions was still dissatisfied, and in June, 1889, the law in force at the present time was adopted, apparently in an endeavor to reconcile all conflicting interests, since it provides for introducing either the public account system or piece-price system, at the option of the Superintendent of States Prisons, and also severely restricts the number of persons in certain lines of competitive industry.

Recent resolves of labor organizations indicate that now the determination on their part is to insist upon a return without delay to the law of 1888, above quoted, coupled with provisions that surplus labor, if any, should be unproductive—this description meaning, perhaps, labor of the treadmill variety. Obviously, the problem is one not easily solved, since considerations having no real reference to the subject are liable to exert a controlling influence in the final decision.

The Diamond in the Machine Shop.

It would seem that the diamond is not used in the machine shop as a tool for cutting metals as extensively as it should be. This is probably due to the fact that only a comparatively few are acquainted with its good qualities and with the character of the work it is especially adapted to perform. Its high first cost, when compared with the best quality steel tool, has worked to its disadvantage. It is doubtful if there are more than forty shops in the country now using the diamond in place of the steel tool, and it is more than probable that there would not be forty shops without it if all were familiar with its peculiar adaptability to the cutting of metals.

The first consideration is the kind of stone best suited to the work. The black diamond has been found to be inferior when used for this purpose, the difficulty of obtaining a properly shaped cutting edge being the principal objection. The best results are obtained by the white or colorless diamond, which can be bought for about $30 a carat when flawed so as to render it useless as a jewel. When a stone of this size and kind has been judiciously selected, it can be so split as to form three cutting tools, which are mounted on the end of a small bar so shaped as to be readily held in the common tool post. The diamond point of a rounded V shape has been found to give the best results.

It has been found by the superintendent of an extensive works where the diamond is largely used, and where its characteristics have been studied for the past few years, that the diamond tool turns out work quicker than the steel tool, and infinitely more accurate. In turning cast brass—say the inside or outside of a cylinder—the scale is first removed with a steel tool. The diamond tool is then substituted and the finishing cut made. This cut may be a full thirty-second of an inch in depth and the lathe may be run at a higher speed than usual. No difficulty has been experienced because of heating. Perhaps the greatest advantage arises from the fact that with the diamond a perfect cylinder can be made. As the wear of the stone is exceedingly slow there is no difference in the diameters of the two ends of the cylinder. The surface formed has an exceedingly fine finish, almost approaching a polish. Another advantage has been found in the fact that the diamond cuts as well through a hard spot in the metal as through the other portions.

Although diamonds properly set for use in the lathe can be purchased, it is much more economical to do all the work in the shop. A worn out diamond can be reduced to powder and the dust used on a lap wheel to grind other stones. The same use can be made of the small pieces which result when splitting the large stone. In fact, there is no waste, and but little time is required to keep all the diamond tools necessary in a large shop in good condition. We have no doubt that the diamond tool is more economical than the steel tool when we take all points into consideration—the first cost, forming, grinding, wear and character of the work done.

The ordinary layman cannot understand why a boat having a radius of action at full speed of 3000, 4000 or 5000 miles is subjected to a final test of only four hours' duration. A cruiser built to attain a speed of 20 knots an hour is considered all right if she can maintain that speed during four consecutive hours. A cruiser is a fast vessel, because she should have speed enough to run away from a more powerful vessel or to assume the most advantageous position, and because she should serve as a commerce destroyer. It would certainly be interesting, and might prove valuable, if one of our cruisers were sent from here to Europe at full speed. The belief is gaining ground that there are few, if any, vessels of the new navy that can travel at their contract speed the full distance their coal capacity warrants.

Although it has had very little effect upon the condition of the pig iron trade thus far, the strike of the Birmingham coal miners is causing the blowing out or banking of an increasing number of furnaces, from the scarcity of coke. It has had the effect, too, of preventing the blowing in of others whose repairs were approaching completion. According to the latest advices, Trussville and Vanderbilt furnaces were banked on the 22d, the two Thomas stacks were put into the same condition early in the struggle and the one Alice of the Tennessee Coal, Iron and Railway Company is also banked, the other having been out for repairs for some time past. The two Sloss furnaces at North Birmingham, one of the four Ensley, the three DeBardeleben, the Florence of the North Alabama Furnace Company and the Mary Pratt are all out. Besides these there are still idle, as they were before the strike, the two DeBardeleben at Oxmoor, the Lady Ensley at Sheffield, the three of the Sheffield and Birmingham Company at Sheffield, the two Woodstock at Anniston and the Decatur. This makes in all 22 furnaces. These plants represent a productive capacity of 60,000 tons per month, out of which, however, only about 41,000 tons can be attributed to concerns whose work has ceased on account of the strike.

Homestead Wages.

(*By Telegraph.*)

Wages at Homestead for three months beginning January 1 and ending March 31 will be based on $27 as selling price of 3 x 3 inch billets for the three months beginning October 1 and ending December 31, 1890. This carries with it a reduction of 9 per cent. in wages For the three months just elapsed wages were based on $29.75 as selling price of billets.

OBITUARY.

EDWARD L. GRIFFIN, treasurer of the Fall River Iron Works Company, died at his residence on North Main street, Fall River, Mass., Sunday, December 21, of pneumonia. Mr. Griffin was about 38 years of age, and was highly respected in the community. When the American Print Works erected a factory he was made the agent, and was in control at the time of his death.

WILLIAM A. BLODGETT, a Boston iron merchant of a number of years ago, died at his home in Woburn, Mass., recently. During the war he was of the iron firm of Blodgett & White, and later connected with the National Bridge and Iron Works, being with this concern when they built the Boston and Lowell and Boston and Providence depots in Boston. Of late years he has been with the New England Machine Company. Mr. Blodgett was born in Somerville, Mass., 61 years ago, was educated at Phillips' Academy, Andover, and Brown University. He leaves a widow, a daughter and two sons.

A test of some samples of Carpenter steel, manufactured for the United States Government, was made by the ordnance officer stationed at Reading, Pa., and resulted in a showing of tensile strength that was a surprise to those participating in the experiment. One of the 1-inch bars tested did not break until a strain of 233,333 pounds had been applied. The elastic limit was 194,000 pounds, and the elongation before breakage was 7½ per cent. Another bar that was tested broke at 177,000 pounds, with 11 per cent. elongation, and another at 139,000 pounds, with 20 per cent. elongation.

A submarine boat possessing novel features is now being built at the Detroit Boat Works. It will not depend upon the addition of dead weight in order to sink, but will be forced beneath the surface by the action of screws. Two screws will be set on movable and adjustable side shafts which will never be perfectly horizental, as a part of the power will be always required to keep the boat under water. Should the machinery become disabled the boat will rise to the surface by reason of its own buoyancy. Storage batteries will provide the power.

MANUFACTURING.

Iron and Steel.

The report that the Birmingham Rolling Mill Company of Birmingham, Ala., had gone into the hands of a receiver is untrue. Thomas Ward, general superintendent, denies it.

The Lady Ensley Furnace, Sheffield, Ala., is now out of blast, and is being relined and put in thorough repair. While these repairs are in progress, it is expected to enlarge the present cast house, to enable the iron hereafter made sufficient time to cool without the wetting process.

The Hattie Ensley, Sheffield, Ala., continues to run full blast, and although of 125-ton capacity, is averaging about 165 tons per day. One day within the last two weeks the furnace run up to a daily capacity of 193 tons on Alabama ores and Pocahontas coke.

The blast furnace at New Decatur, Ala., which was run for a few months last summer, is still idle, and, it is stated, is for sale or lease.

The three furnaces, formerly known as the Sheffield and Birmingham Coal, Iron and Railroad Company, Sheffield, Ala., under the new organization are undergoing extensive improvements and additions. Twelve new boilers are now in place. An addition to the stock house of 150 feet is already completed.

The new Philadelphia Furnace, at Florence, Ala., is nearing completion, but is understood will probably not go into blast until early summer.

The North Alabama Furnace, Foundry and Land Company's Furnace, at Florence, Ala., remains out of blast. It is reported that the furnace is for sale.

The work of constructing the new furnace at Piedmont, Ala., is vigorously in progress under the charge of H. B. Minigan. A force of 25 men are at work on the two hot blast ovens, and work will soon begin on other parts of the plant.

It is stated that parties have purchased $35,000 worth of land adjoining Riverside, Ala., and have contracted to build and operate within the next year a furnace with a capacity of 100 tons.

The new mill of the Fort Worth Rolling Mill Company is about completed and will go into operation in a few days. At a recent meeting of stockholders the following directors were chosen: J. P. Smith, A. J. Roe, George B. Hendricks, Oscar Lynch, Wm. Caps, J. L. Taft and G. E. Beach. This company have a cash capital of $50,000. It is stated that there is a prospect of a wire mill being established by this company after the rolling mill gets into operation.

At Richmond, Va., recently, the York Steel and Iron Company, with a maximum capital stock of $1,000,000, was incorporated by M. M. Strause, Leon Wallastein, Samuel Croskauer and others to construct and operate iron furnaces and a steel plant near Yorkville, S. C., in the vicinity of which this company have recently purchased a large body of iron ore land.

A company are reported organizing in the East to establish an iron furnace and steel plant at Mascotte, Tenn.

The Buchanan Steel Works have been organized at Buchanan, Va., by J. D. Weeks, E. Dillon, M. H. Payne and others to establish steel works with the view of employing the Adams direct process. The capital stock of this company is reported to be $100,000.

The South Tredegar Iron Company of Cardiff, Tenn., recently reported as being in negotiations for the purchase of the iron works plant of the South Tredegar Iron Company at Chattanooga, has about perfected the terms of purchase of the entire plant and will soon remove same to Cardiff, where new and enlarged buildings will be erected and the manufacture of steel commenced. This company have a capital stock of $600,000 and among the incorporators are W. T. Rice of Fort Payne, Ala.; C. L. James of Boston, Mass; J. M. Duncan of Chattanooga, Tenn., and others.

The DeBardeleben Coal and Iron Company at Birmingham, Ala., announce that they have secured enough negro miners to take the place of the strikers to warrant them in starting their two Oxmoor furnaces and one of the Bessemer furnaces. They will start up in a few days

The Belmont Nail Company of Wheeling, W. Va., have decided to tear out a number of the machines in their nail factory and erect a sheet mill in the space thus secured. Work on the new addition will be commenced in a short time.

Furnace B of Carnegie Brothers & Co., Limited, at Braddock, Pa., has been blown out for relining and repairs. At present three of the nine stacks of this firm at the above place are idle and undergoing repairs.

An order for 500 tons of light fine iron is being shipped from the Star Iron Works of Lindsay & McCutcheon in Allegheny City, Pa., to California. It is put up in boxes, each holding 800 pounds, and is forwarded over the Ohio River to the Gulf of Mexico.

The Carbon Iron Company of Pittsburgh expect to make a number of important improvements and additions to their plant in the near future. These will be made with a view materially increasing the capacity of their plant.

Hecla Furnace, of the Hecla Iron and Mining Company at Ironton, Ohio, was blown out on Wednesday, the 24th ult. This furnace was operated during the year 1890 by George N. Gray & Co. of Cincinnati, Ohio, but they have given up possession. At present it is not known who will operate it during the present year.

Announcement is made that a new company will operate the plant of the Center Iron Company, at Bellefonte, Pa., consisting of a blast furnace and muck mill. Robert, Abram S., George and Jacob B. Valentine, Daniel Rhodes, J. W. Gephart and John M. Dale have signed the certificate of incorporation and made application to the Governor for a charter. The new company will be named the Valentine Iron Company, and it will probably begin operations as soon as the charter grant is received, which cannot be before the next term of Center County Court, which occurs in the middle of January.

No. 4 blast furnace of the Pennsylvania Steel Company, at Steelton, Pa., was blown out last week. Extensive improvements and alterations are now in progress with a view of increasing the capacity of the furnace.

The much agitated steel works at Denver, Col., are in a fair way to materialize, since it is authoratively announced that a company has been organized with a capital stock of $5,000,000, of which $500,000 has been paid in. At a recent meeting of the Executive Committee of the Iron and Steel Manufacturing Bureau of that city the organization was effected, and work will soon begin on what is promised to be the most extensive establishof its kind in Colorado.

A consolidation of iron, coal and railway bonded interests has been made at Bristol, Tenn., which will result in the building of a steel plant at that place, which will be among the largest in the country, according to the statement made by those who are identified with the enterprise. It is stated that Hon. Abraham S. Hewitt is largely interested in the corporation. The consolidated company is composed of the following corporations: The Bristol, Elizabethton and North Carolina Railroad Company, with 68 miles of road construction; the Doe Mountain Mining and Manufacturing Company; the South Bristol Land and Improvement Company; the Crab Orchard Coal and Iron Company, owning 18,000 acres of coal lands; the Pioneer Steel Company; the Pioneer Land Company and the Bristol Steel and Iron Company, who are building the blast furnace in West Bristol, and the Ironton New Jersey Steel Company.

At a special meeting of the Norristown Steel Company, Norristown, Pa., the board of directors voted to adopt the Adams process for the works now building.

No. 3 Furnace of the Glendon Iron Company, Easton, Pa., has blown out, leaving only two of the four stacks of the company in blast.

The Wisconsin Furnace Company have released for two years the blast furnace plant of the Fond du Lac Iron Company, Fond du Lac, Wis. W. H. Nelson is superintendent of the plant.

At Pulaski, Va., sufficient stock has been subscribed to a new rolling mill company for the manufacture of structural iron to insure the beginning of work on the plant when the weather permits.

It is stated that Chicago capitalists are negotiating at Denison, Texas, for the establishment of a charcoal furnace.

The new iron furnace, at Graham, Va., with a capacity of 125 tons per day, has been completed and will go into blast early in January.

The question of establishing a furnace is being agitated at Mineola, Texas, near which place are said to be deposits of iron.

Application for a charter for the Pittsburgh Wire Company of Braddock, Pa., has been made. The incorporators are Lieut. L. W. Fitch, formerly of the Braddock Wire Company, B. L. Wood, Jr., and W. J. Gilmore. The new company have secured possession of a large plot of ground at Braddock, Pa., on which they will erect a plant for the manufacture of all kinds of wire, but special attention will be directed to rolling copper wire, such as used for electrical purposes. Although the manufacture of steel wire is largely carried on in Pittsburgh and immediate vicinity, none of the plants have ever rolled copper wire. Active building operations will be commenced in a short time. The main building will be 250 x 112 feet in size, and will be of iron and brick between the columns. The roof will be of corrugated iron. The contract for the building has been given to the Shiffler Bridge Company of Pittsburgh. Mackintosh, Hemphill & Co., Limited, will build the engines, the A. Garrison Foundry Company have the contract for the rolls and rod mill, while the boilers will be furnished through the Pittsburgh branch of the Babcock & Wilcox Company of New York. Slack coal will be used for firing the boilers, and will be supplied by barges on the Monongahela River. It is the intention of the company to make the plant one of the most complete of its kind in the country, and to secure this no expense will be spared in its construction.

Furnace No. 10 of the Thomas Iron Company, at Hellertown, Pa., will be put in blast in a few days. It has been idle for some time undergoing repairs.

On Thursday, the 18th ult., the Lackawanna Iron and Coal Company of Scranton, Pa., announced that on account of the depression in the steel rail trade the wages of their employees would be reduced on January 1, 1891, to the basis existing just previous to the increase made on January 1, 1890. The reduction will average about 20 cents per day.

The Laughlin Nail Company of Wheeling, W. Va., whose nail factory is located at Martin's Ferry, Ohio, are now adding 33 new nail machines to their present equipment. This addition will make the nail factory of this firm the largest in the world, with an annual capacity of 700,000 kegs. During the six months now drawing to a close the above firm have turned out more nails than ever before in their history in the same length of time.

Gadsden Furnace, at Gadsden, Ala., was banked on the 23d ult., rendering idle some 200 hands. Depression in the iron market is said to have led to this move.

We are advised that there is no truth whatever in the report that John Phillips has retired from the Oliver Iron and Steel Company of Pittsburgh. Some time ago this firm decided to abandon the manufacture of mining supplies, because all the room was needed for their iron and steel business. When they decided to give up this branch of their business the good-will and machinery was sold to two sons of Mr. Phillips, and a new organization was formed, known as the Phillips Mining Supply Company, of which John Phillips is president. A plot of land was purchased on the South Side, Pittsburgh, and a plant is now being erected. The connection of Mr. Phillips with the new company doubtless gave rise to the rumor that he was no longer identified with the Oliver Iron and Steel Company.

Cedar Point Furnace, at Cedar Point, N. Y., has been blown out, the top having been seriously weakened. One of the Bay State furnaces will probably blow in next spring.

Machinery.

H. K. Porter & Co of Pittsburgh, builders of light locomotives, have just shipped a 3-foot guage locomotive to be used on the United States Government improvements at Sandy Hook. They have also a 23-inch guage locomotive ready to ship to San Domingo to be used on a plantation road. Both are of a diminutive character.

The iron works of William Kehoe & Co., at Savannah, Ga., are being enlarged and additional new machinery is being put in, and the manufacture of steam sugar mills will be commenced.

Muller Brothers, Columbia, S. C., contemplate the erection of an iron foundry in that place.

The Essex & Smith Mfg. Company have been incorporated at Chattanooga, Tenn., by George Essex, W. H. Smith, E. M. Eaton and others, who will engage in the general manufacture of castings, implements and machinery.

The A. Garrison Foundry Company, of Pittsburgh, have received the contract for the erection of a rod mill for the Baackes Wire Nail Company of Cleveland, Ohio.

The Hattiesburg Machinery and Car Mfg. Company, recently incorporated at Hattiesburg, Miss., in addition to the manufacture of cars, will conduct a general machine shop business.

Wm. B. Pollock & Co., proprietors of the Mahoning Boiler Works, at Youngstown, Ohio, have notified their employees that commencing on January 1 the firm will return to the old system of 10 hours work and ten hours pay. Last September this firm, in connection

with others at Youngstown, granted the request of the men to pay them 10 hours' wages for nine hours' work, provided others in the Mahoning Valley did the same. It is claimed that some of their competitors have gone back to the old system, and they desire to be placed on the same footing. Unless the men agree to the reduction the works will be closed down.

The Jasper City Land and Mining Company are interested in the establishment at Jasper, Tenn., of a foundry and wheel works, negotiations for which are now pending.

It is stated at Buchanan, Va., that a Michigan machine works plant that makes a specialty of manufacturing saw mill machinery is likely to be moved to Buchanan.

The new foundry company at Ivanhoe, Va., have awarded the contract to Pierce Bros. for the construction of their foundry building, and work on this plant will be begun immediately.

The Columbia Steel Car Company have bought 537 acres of land at Riverview, near Des Moines, Iowa, and will establish a large plant there. The factory itself will be 660 x 148 feet, and a large foundry and other small buildings will increase the ground area of the plant very materially. The capacity of the plant will be from 15 to 20 cars a day, and the work of erection will begin at once.

The Globe Iron Works, Limited, of New York, have been incorporated to manufacture car wheels and railroad furnishings and machinery generally. The capital of the company is $50,000, and the incorporators Amos C. White, Edward C. White and Wm. E. Rice.

It is stated at Fort Payne, Ala., that negotiations are pending for the removal of a nut and bolt factory from the North to Fort Payne.

The Americus Supply Company, with a capital stock of $10,000, have been incorporated at Americus, Ga., by Bloom Brown, C. P. Payne and E. T. Harris, for the purpose of establishing machine works.

It is stated at Middlesboro, Ky., that W. H. Philip of Taunton, Mass., is negotiating with a view of removing his machine shops and iron foundry to Middlesboro.

The Mowry Stevenson Iron Foundry and Machine Shops, at Anniston, Ala., which have been idle for some time owing to the death of both members of the firm, will soon be sold at administrator's sale.

All the machinery necessary for the operation of the Morgan Iron Works, at Spartansburg, S. C., has been received and is being placed in position.

The Warwick Iron Works, at Newport News, Va., have been greatly enlarged and improved. The force will likewise be increased.

The Springfield, Ill., Boiler Works are running night and day to keep pace with others. They recently closed a contract for $10,000 worth of work.

All the machinery necessary for the operation of the Morgan Iron Works, Spartanburg, S. C., is now on the ground, and a few machines are already in operation. The capital stock has been increased to $25,00', and was quickly taken.

It is reported on excellent authority that the foundry and machine department of the Harrisburg Car Mfg. Company of Harrisburg, Pa., will separate from that concern, and in the near future apply for a charter in the name of the "Foundry and Machine Department Successor." The capital stock of the new organization will be $200,000, divided into 4000 shares of the par value of $50 each. Every creditor of the Harrisburg Car Company or their branch will have the privilege of subscribing such amount of stock as may be desired up to the amount of his approved claim against the old corporation. Parties who are familiar with the business and value of the foundy and machine plant have signified their intention of subscribing to stock to the amount of $100,000 or more.

R. Monroe & Son, proprietor of the West Point Boiler Works, at Pittsburgh, have on hand two large contracts for boilers for shipment to Cincinnati. One contract is for 10 boilers 78 inches by 20 feet, each boiler containing 78 4-inch tubes and weighing about 15 tons. The other order is for 10 boilers 60 inches in diameter and varying from 14 feet to 18 feet in length.

The works of the Lake Erie Engineering Works, now under course of construction, at Buffalo, N. Y., are beginning to assume proportion, and will soon be completed.

The foundry of Rupert, Fisher & Co., at Missoula, Mont., has been burned, at a loss of $10,000; no insurance.

Shelter & Co. New Cumberland, W. Va., report a full order book. Their foundry capacity will shortly be increased by the erection of another cupola.

The plant of the Tennessee Coal and Iron Railroad Company, at South Pittsburg, Tenn., is to be further equipped by the addition of two blowing engines, now building at the shops of the Weimer Machine Works Company, Lebanon, Pa. Each engine will be 50 x 96, with 60-inch stroke, and each representing 1200 horse-power.

The machine shop of the Missouri, Kansas and Texas Railway Company of Greenville, Texas, is to be considerably enlarged.

The Playlor Motor Company of Atlanta, Ga., are preparing to erect a factory at Gordonsville, Va., for the manufacture of sewing machine motors.

A new cupola has been added to the iron foundry of the Ronceverte Machine and Foundry Company, at Ronceverte, W. Va.

The Fitchburg Engine Company of Fitchburg, Mass., will move the entire plant to Gardner next year, at as early a date as a building can be erected. When finished the building will be 170 x 70 feet.

The Rollins Engine Works, Nashua, N. H., builders of the Rollins automatic cut off steam engine, have recently shipped one of their 250 horse-power engines to the Amesbury Electric Light Company, Amesbury, Mass.

The Emerson Machine Company of Granby, Conn., are preparing to double their present capacity.

The American Electric Machinery Company have been organized at Portland, Me., for the production or transmission of power, light and heat. The capital stock is $100,000.

The machine shops of the Buchanan Bridge Company, Bellefontaine, Ohio, are rapidly approaching completion.

Hardware.

The Stafford & Holden Fork Manufactory, at Barre, Vt., has commenced to operate the new machinery which was recently put in. It has started up a new 5000 pound power press, which will cut in the rough from bar steel 4000 two-tined hay forks or 2000 four-tined in one day. It has also started a rake cutting machine, which cuts one-half of a rake, instead of one tooth, as by the old arrangement. Since October 15 3000 dozen forks, hoes and rakes have been turned out.

Perkins Bros. are making many additions to their wire nail mill, at Bridgewater, Mass. They have fitted up another wire drawing machine, and also enlarged the annealing furnace, and will soon put in another pickling vat.

There is some prospect of the American Axe and Tool Company removing their business from Nashua, N. H., to East Douglas, Mass., as the same company own both works; it is claimed that $8000 a year can be saved by having the works consolidated.

Naugatuck Malleable Iron Company, Naugatuck, Conn., advise us that their business consists entirely in making malleable iron castings to order, the parties usually furnishing their own patterns. They do no finishing whatever, simply furnish the rough castings to their customers, who are largely manufacturers of mowing machines, wringing machines and hardware in general.

The Silver Plate Cutlery Company, Birmingham, Conn., advise us that their business is largely manufacturing goods for other manufacturers. They do, however, manufacture silver plated solid steel table cutlery, their trade for these goods being almost exclusively with those in the jewelry business.

Janesville Hay Tool Company, Janesville, Wis., report that their trade is exceptionally good, and that their new steel track for hay carriers is meeting with a cordial reception from dealers.

Overman Wheel Company, Chicopee Falls, Mass., will about January 1 occupy a new building situated opposite their present extensive factory and connected with it by iron bridges. The new building is 50 x 200, with six floors and an L 50 x 70 for a power house—in all 70,000 square feet of floor space. Electric lights are used throughout, and the shop is equipped with duplicate plants for oil and coal fuel for forging and steam. The new plant will be equipped with the finest machinery and improved appliances for manufacturing bicycles.

The new factory of the Excelsior Needle Company, Torrington, Conn., will be completed soon after January 1 and occupied at once. The property at present used by the company will be offered for sale.

Taylor & Gale, Chicopee Falls, Mass., have purchased of John Mudgeth his entire interest in his flat spring tedder fork patent, and intend to have this tedder on the market for the hay harvest of 1891.

The Belcher & Taylor Agricultural Tool Company, Chicopee Falls, Mass., have purchased John R. Whittemore's feed cutter business, including patterns, patents, good will, &c.

Wentworth Spring and Axle Company, Gardiner, Maine, are manufacturing a dust guard axle, the guard being to light axles what the Collinge collar is to heavy axles. They report that these goods are proving great favorites.

Union Hardware Company, Union, N. Y., advise us that they are constantly adding to their line of goods and increasing their capacity, and intend soon to issue a new catalogue. They report trade as very good with them.

Henry Schade, 56 and 58 Ainslie street, Brooklyn, N. Y., manufacturer of silver plated ware, advises us that to accommodate his increasing business he is about to add another story to his factory, 40 x 80 feet.

F. E. Myers & Bro., Ashland, Ohio, report an exceedingly large lot of orders for 1891 wants and a trade in their Hay Tool department requiring night turns. They have recently built an extension to their warehouse 60 feet in length, and have put in three expensive machines, namely, a P. D. Q. pipe cutter, bulldozer and an extra heavy lathe.

Miscellaneous.

C. C. F. Agnus and others are organizing a company at Bristol, Tenn., having a capital stock of $20,000, to establish a foundry for the manufacture of plows recently patented by Mr. Agnus.

The Washburn & Moen Mfg. Company of Worcester, Mass., recently completed a wire rope for the Denver Tramway Company, Denver, Col., which is 6 miles long, weighs 43 tons, and has more than 4,800,000 feet of crucible steel wire in its make up.

It is stated that the Rogers-Spencer Company of Springfield, Ohio, are investigating Roanoke, Va., with a view of moving their plant to the latter place.

We have received from Borden, Selleck & Co. of Chicago a very complete pamphlet, describing the Harrison conveyor for handling grain, cinders, coal, &c. The machinery is described in detail, and illustrations are given of the many uses to which the conveyor can be put.

The Ansonia (Conn.) Brass and Copper Company continue the enlargment of their mill. The largest to receive attention is the brass mill. To this an addition 90 x 155 feet is built, similar to that begun some months ago at the wire mill. No new departments are to be added, but old ones are to be re-arranged so that the output of the mill will be increased.

The plant of the Indianapolis Car Works, Indianapolis, Ind., has been sold under the hammer to Emil Pollock, who is said to represent a syndicate of the car works creditors for $52,500. The plant comprises 15 acres of land, and buildings and machinery recently appraised at $176,000.

The Eureka Pipe Line Company have been chartered in Charleston, W. Va., with a capital of $1,000,000, to operate in the West Virginia field.

The Maryland Tack and Wire Nail Company, capitalized at $50,000, are erecting a factory 195 x 65 feet at Front Royal, Va.

The Hampton Corundum Wheel Company of Chester are to remove to Brightwood, near Springfield, Mass.

The Columbia Steel Car Company expect to begin building at once on the land secured in the township of Maine.

A large two story wooden building is to be erected by the Holmes Company, at Augusta, Maine. The building is to be 40 x 25 feet, and will be used exclusively for the manufacture of a new lubricant bearing.

Nathan Bartlett, the inventor and builder of the first oxide of zinc and spelter furnaces erected in America, in company with Henry M. Frost and other prominent Boston gentlemen, during the past week visited the plant of the Washington Zinc Works, at Lynchburg, Va., for the purpose of examination. They also visited the zinc mines at Brinfax, and it is stated as probable that the mission of these gentlemen is the establishment in Virginia of an important manufacturing enterprise.

The Virginia Mantel and Grate Company have been incorporated at Glasgow, Va., with a capital stock of $50,000. Max Danziger of Cincinnati, Ohio, is president; W. S. Strait is vice-president, and A. J. Reiner is secretary. This company will operate the grate and mantel factory recently moved to Glasgow from Cincinnati.

The Tyler Tube and Pipe Works, at Washington, Pa., were started up Monday with about 200 hands. It is stated that the company have orders enough already booked to run the mills for five or six months full time.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, December 31, 1890.

The outlook is gradually becoming more cheerful as the financial pressure is lighter. Business has only been checked in a measure, and heavy purchases will be in order as soon as consumers become convinced that prices will not go much lower.

Pig Iron.—Some sales of Coke Iron have been made to foundrymen, who regard ruling rates very low, and have requirements to be covered; but others are still looking for bargains. The trade has been canvassed thoroughly by salesmen of leading houses, who report that fully two-thirds of the local consumers will be in the market within 30 days. Their stocks are quite light, while work continues to come in most encouragingly. The Southern situation is unchanged, and more furnaces are going out of blast. Lake Superior Charcoal is in good demand by large consumers, and sellers at low prices are scarce. Stocks are decreasing at the furnaces, and this branch of the Pig Iron trade is getting more under the control of the producers.

Lake Superior Charcoal	$18 50 @ $19.00
Local Coke Foundry, No. 1	15.50 @ 16.00
Local Coke Foundry, No. 2	15.00 @ 15.50
Local Coke Foundry, No. 3	14.50 @ 15.00
Local Scotch	16.50 @ 17.00
American Scotch	18.25 @ 18.75
Southern Coke, No. 1	16.25 @ .....
Southern Coke, No. 2	15.25 @ 15.75
Southern Coke, No. 3	14.25 @ 14.50
Southern, No. 1, Soft	15.25 @ 15.75
Southern, No. 2, Soft	14.75 @ .....
Southern Gray Forge	14.50 @ .....
Southern Mottled	14.00 @ 14.50
Tennessee Charcoal, No 1	18.50 @ .....
Alabama Car Wheel	22.25 @ 23.50

Bar Iron.—In this line there is not much doing at present. Light stocks are held by merchants and consumers and a heavy business is expected in the near future. Numerous orders for cars are pending, but are withheld until after January interest settlements. Local manufacturers quote Common Iron 1 70¢ @ 1.75¢, half extras for mill lots at Chicago.

Structural Iron.—The Masonic Temple contract was secured by A. Gottlieb, and the material, which will aggregate over 400,000 tons, will be furnished by the Columbia Iron and Steel Company. Allegations are made that prices were cut by the successful competitors. Quotations, f.o.b. Chicago, in carload lots, are as follows: Angles, 2.35¢ @ 2.40¢; Tees, 2.90¢ @ 3¢; Beams, 3.20¢; Universal Plates, 2.45¢ @ 2.50¢; Sheared Plates, Iron, 2.50¢ @ 2.60¢; Steel, 2.60¢ @ 2.70¢. Beams sell from store in small lots at 3.70¢, but Angles and Tees at 10¢ @ 15¢ ℔ 100 above carload prices.

Plates, &c.—Several nice orders have been placed with local dealers. One of them calls for 24 large steel boilers, requiring five carloads of flues. Prices are still firm, notwithstanding an occasional offer at cut rates from mills which do not regularly supply the market. Quotations are unchenged at: Nos. 10 to 14 Iron Sheets, 2.75¢ @ 2.80¢; Steel Sheets, 3¼¢ @ 3¼¢; Tank Iron, 2.60¢ @ 2.70¢; Tank Steel, 2.80¢ @ 2.90¢; Shell Iron or Steel, 3.25¢; Flange Steel, 3.50¢; Fire Box Steel, 4.25¢ @ 5.5¢; Boiler Rivets, 4¢ @ 4.25¢; Boiler Tubes, 45 % off for 1¾ inch or less; 50 % off for 2 to 4 inch.

Sheet Iron.—Agents quote 2.90¢, at mill, for No. 27 Common, but will shade this on desirable orders. Jobbers sell small lots at 3.30¢ @ 3.40¢. Galvanized is selling in a small way at 60% and 5 % for Juniata.

Merchant Steel.—Business is very quiet, and but little is expected until some time in January. Regular quotations unchanged. Tire Steel, 2.50¢ @ 2.60¢; Open Hearth Spring, 2.65¢ @ 2 75¢; Open Hearth Machinery, 2.50¢ @ 2.75¢; Bessemer Machinery, 2.25¢ @ 2.30¢; Crucible Spring, 3.50¢; Tool, 7¢ and upward; Plow Steel, 2.50¢ @ 2.60¢; Crucible Sheets, 7¢, 8¢ and 10¢.

Steel Rails and Fastenings.—Orders for Rails are being received to some extent, but season contracts are still withheld. Manufacturers quote $31 @ $31.50 for spring delivery, but make special rates for winter work. Splice Bars are unchanged at 2.05¢ @ 2.10¢ for Iron and 2.15¢ @ 2.20¢ for Steel. Spikes are maintained at $2.20 @ $2.25, and Track Bolts, with Hexagon Nuts, at 3.10¢.

Old Rails and Wheels.—Old Iron Rails are extremely dull. The usual quotation is $23.50, but this is reported to have been shaded. Railroads are trying to keep up prices, and quite a number are refusing to sell at current rates. Old Steel Rails are completely neglected, and in the absence of transactions it is defficult to make a quotation. Old Car Wheels are dull, butprices are not giving way, holders still asking $18 @ $18.50.

Scrap.—Dealers are looking forward to a revival of business in January, which is foreshadowed by an increase in the inquiries from consumers. At present business is completely stagnant. Dealers' quotations are as follows ℔ ton of 2000 lb: No. 1 Railroad, $19; No. 1 Forge, $18; No. 1 Mill, $14; Fish Plates, $22; Axles, $25; Pipes and Flues, $14; Horseshoes, $18; Cast Borings, $8; Wrought Turnings, $10.50; Axle Turnings, $13; Machinery Cast, $13; Stove Plates, $9; Mixed Steel, $10.50; Coil Steel, $16; Leaf Steel, $17, and Tires $18.

Metals.—Lead is quiet and unchanged. Spelter is in some demand and quoted at 5.70¢. Lake Copper is weaker and down to 16.25¢ @ 16.37½¢. Casting brands are held at 13.50¢, carload lots.

The Trade in 1890.

In many respects the year 1890 was a disappointment. Seldom has a year opened with brighter prospects. The huge volume of business in the latter part of 1889 gave the trade an impetus which it was seen could not be checked for some months, and therefore caused bright anticipations of an entire year of prosperity. The rail mills had orders booked covering one-third of their entire capacity for 1890, and the demand for other forms of Steel crowded the works. Steel Rail makers, acting on the presumption that they would not be able to meet their Pig Iron requirements from their own resources, had gone outside and placed large orders for Bessemer Pig Iron with furnace companies whose usual output was Foundry Iron. The consumption of Foundry Iron at the same time showed evidences of rapid growth, and the prospect of a restricted supply of Pig Iron caused consumers to make unusually heavy contracts, often exceeding their actual requirements in the belief that under the circumstances they could afford to speculate. Of course outsiders were attracted by the possibility of a great advance in Pig Iron, and their purchases for purely speculative purposes helped to strengthen the market. The extraordinary demand for Iron Ore bade fair to crowd the Lake Superior mines to the utmost limit of their capacity and of the facilities for shipping and receiving Ore, but the inevitable advance in price of this essential material was regarded as a small matter as long as furnacemen were sure of receiving a sufficient profit to cover the increased cost of their Pig Iron. Coke and railroad freights also advanced, but these were regarded as incidents of the situation. The prospective blowing in of a large number of furnaces, especially in the South, whereby the production of Pig Iron would be very considerably increased, was not regarded with the importance which it deserved, although warnings were given from time to time by the trade press. The demand for Bar Iron and other finished material was largely in excess of former years, and for a time seemed almost beyond the capacity of the mills. Railroads bought enormous quantities of rolling stock, involving the consumption of more Iron and Steel in that direction than had been the case for years. Railroad traffic was of immense proportions, and all interests connected with railroads profited by their excellent condition. Engineering works were crowded with orders, the building trades were most actively employed, and it would, indeed, be difficult to name a branch of trade in which there was any ground of complaint. In but a limited section of the country tributary to Chicago had there been a failure of crops the previous season, and the industries dependent for their prosperity upon the condition of the farmer were busier than ever before in their history; even the plow manufacturers, who had been in the vale of adversity for years, now confessed their changed condition. With all this, however, prices were not unduly inflated in the Chicago market. There was no boom nor the resemblance of a boom. Conservative views prevailed, and prices were kept at a moderate point. In the light of subsequent events this was a wise policy.

Pig Iron was the commodity to develop weakness earliest. It did not advance as the speculators expected, and when they began to realize in the latter part of January prices slowly gave way, losing ground which was never recovered. At times heavy buying caused prices to be maintained for a considerable period, but their tendency was generally downward, the lowest prices of the year being made in December, when sales took place at rates as low as, if not below, any ever before ruling in Chicago.

The Steel Rail trade was not so disappointing as the Pig Iron trade, but its failure to realize expectations is shown by the cancellation in June of contracts with outside makers for Bessemer Pig Iron which it was then found would not be needed. Steel Rail prices are now but a little above the lowest rates made in 1889.

The makers of Bar Iron and Merchant Steel have had greater reason to be pleased with the results of the year than most manufacturers, their trade having been well maintained until very recently. But taking the entire Iron and Steel connection, no interest has enjoyed a season of prosperity at all comparable with that which fell to the lot of the commercial branch.

Chicago Iron and Steel merchants, including those who handle hardware, never before experienced such a year for activity for trade, and presumably profitable trade, as 1890 proved to be.

The downward tendency of prices during the year was general by causes wholly out of line with local conditions. Seldom has the Northwest enjoyed a year of greater general prosperity and with fewer disturbances to the even movement of trade. Heavy crops garnered the previous year kept the railroads well employed, so that they were able for months to freely buy supplies and material for renewals, while heavy crops again in 1890, with market prices much higher, gave assurance of continued profitable traffic. Even occasional rate wars did not seem to impair their net earnings, as they were not sufficiently protracted to become injurious.

The consumption of building material through the Northwest was larger than ever before, although, as usual, there were some annoying strikes in Chicago. The result of the November election has been alluded to in some quarters as having a depressing effect upon business, but so far as the Northwest is concerned this effect has yet to become visible. The financial stringency which became potential about that time caused a serious disturbance to business, which still continues, and to which can be directly imputed the dullness of trade now existing. Only three failures of any consequence occurred during the year in this locality, and they were not directly in the Iron trade, showing that the Iron and Steel interests of the Northwest are in healthy condition.

The outlook for the future is obscured by the financial stringency at present, which invests the situation with discomforting uncertainty, but the worst is now believed to be over, and the trade look forward with hope to good times in 1891.

Pig Iron.

High water mark in the Pig Iron trade was reached in January. At that time the consumption of Pig Iron was so large, and the requirements for the year promised to be so much beyond anything before known, that a buoyant feeling prevaded all Pig Iron circles. Here and there, however, doubts were expressed by prudent members of the trade as to the ability of the country to absorb the production, which was known to be increasing at an unprecedented rate. They took care to sell their product as far ahead as possible at market prices, in spite of predictions that Iron would go much higher, and that ore and coke would advance also, in which case there was a possibility that the increased cost would wipe out all profits. Subsequent events proved the sagacity of those who sold. Before the month of January had ended it was seen that Iron had reached its hight for the time, and speculative holders tried to unload. Consumers who had overbought also attempted to make re-sales. The downward movement then began, which continued with only an occasional halt throughout the year. The prominent Southern furnace companies tried to check the downward movement by an agreement to maintain prices, and faithfully adhered to that agreement until March. The local manufacturers of Coke Iron, however, followed the market and left their Southern competitors without business. In February the tone of the market changed somewhat, owing to large purchases by heavy consumers. Speculative lots disappeared. Consumers who had been anxious to make re-sales of supposed surplus stocks found that they would need what they had bought. Lake Superior Charcoal was purchased in large blocks. The mildness of the winter had prevented the Charcoal furnaces from laying in a good supply of fuel, and some fears were entertained of a scarcity of this grade of Iron. Prices of Coke Iron did not advance to the rate maintained by Southern furnacemen, but they still refused to make concessions, believing that they were in control of the situation. Before the month was out there came another change, caused by weakness at Pittsburgh in Bessemer Pig Iron, which completely unsettled the market. Renewed efforts were made to sell, which were continued in March, when a mild sensation was caused by the Southern manufacturers suddenly reducing their prices below the level of Northern Iron and capturing large contracts. Other prices dropped in sympathy, and it was stated by veterans in the trade that they had never before known so great a decline in so short a period. The decline continued through April and May, being assisted by a struggle for business between Southern furnace companies, Northern sellers refusing to meet the extreme prices made, as they were hampered by higher cost of Ore and coke. The market was quite active at the low rates ruling for Coke and Charcoal Iron, showing that the low prices of Pig Iron were not the result of a depression in general business, but were clearly caused by overproduction. In the latter part of May and the beginning of June trade was extremely active, and the volume of business grew to huge proportions, rivaling that of November, 1889. Northern furnaces were most successful in the competition for business at this time. Heavy contracts for Bessemer Pig Iron were canceled in June by Steel companies, who paid a forfeit for their release. More Foundry Iron capacity was thus thrown upon the market, which was, however, sufficiently active to absorb it without a ripple, except in the case of Lake Superior Charcoal. There had been a contest of endurance between makers and users of Charcoal Iron, which was settled when some of the makers, who were thought to be out of the market by reason of contracts with Steel companies, began to compete vigorously for business. A cheerful feeling prevailed in July, although prices were very low. The country generally was prosperous; makers were well supplied with orders; the crop reports were very satisfactory; labor was fully employed at good wages, and not a cloud was to be seen anywhere. If a furnaceman made an occasional cut to secure a desirable order, it had no weakening effect on the market. August trade was unexpectedly good, and makers were urged to deliver Iron more rapidly by those with whom they had contracts, showing that consumption was exceeding anticipations. September was a quiet month, but some apprehension was caused by pressure to sell from Southern furnaces. October was more cheerful on account of increased sales both of Coke and Charcoal. Much trouble was experienced in making deliveries by reason of a scarcity of cars on all railroad lines. The increasing demand for Iron brought out speculative inquiries again. November, however, was the black month of the year. The financial stringency which had upset Eastern markets then made its appearance in the West For a time it was hoped that no serious consequences would be felt in this locality, but the embarrassment of the United States Rolling Stock Company dispelled such hopes, and by making banks shy of industrial paper caused much inconvenience. There was no decided break in Pig Iron prices, as there was but little business done to test the market. Possibly a slump would have taken place if the Southern coal miners had not announced that they would strike on December 1, and it was believed that this would compel a large number of Southern furnaces to suspend operations. Ohio furnaces were also known to be blowing out to compel coke operators to lower the price of coke and railroads to reduce freight rates. In a regular way prices were fairly maintained until about the middle of the month, when the pressure for sale of odd lots from various sources carried the market down to the lowest prices of the year. A table is given below showing the course of prices at Chicago in 1890 for the leading varieties of Pig Iron. The condition of the market, on the whole, is probably best reflected in the prices of Lake Superior Coke. Monthly averages are stated.

Months.	Lake Superior Coke, No. 1.	Lake Superior Charcoal.	American Scotch (Blackband), No. 1.	Southern Coke, No. 1.
January	$20.50	$23.00	$21.50	$20.50
February	19.50	23.00	21.75	20.50
March	18.50	22.50	21.00	18.50
April	18.00	21.50	20.00	16.50
May	17.00	21.00	19.50	16.50
June	16.75	20.50	19.50	16.50
July	16.75	20.00	20.00	16.50
August	16.75	20.25	20.00	16.50
September	17.00	20.25	20.00	16.50
October	17.00	19.75	18.75	16.25
November	16.50	19.25	18.75	16.25
December	15.75	18.75	18.75	16.25

Finished Iron.

Bars, Angles, Plates, Sheets and other products coming under the common designation of Finished Iron fared much better in 1890 than Pig Iron. They sympathized to some extent with the decline in Pig Iron, but for the most part maintained remarkable independence. The demand for these products was not only larger than ever before known in the Chicago market, but it was a sustained demand which showed a slight diminution in March, April and May, but kept up to high pressure until the financial stringency of November and December affected all classes of trade and all values. At no time in the year did the price of Bar Iron approach the general level of prices in 1889. The local Bar Iron market was governed to a greater extent than ever before by the local manufacturers. Other classes of Finished Iron, as enumerated above, are not produced locally. The following table presents monthly average prices at Chicago for mill lots of Common Bar Iron, Angles and No. 27 Sheet Iron:

Months.	Common Bars. Cents.	Angles. Cents.	No. 27 Sheets. Cents.
January	1.95	2.55	3.30
February	1.90	2.55	3.30
March	1.80	2.50	3.20
April	1.75	2.35	3.10
May	1.70	2.25	3.00
June	1.80	2.25	3.15
July	1.80	2.30	3.15
August	1.85	2.35	3.25
September	1.90	2.35	3.25
October	1.85	2.35	3.20
November	1.80	2.35	3.15
December	1.77½	2.35	3.05

Steel Rails.

The year opened in this branch of business with most excellent prospects. Large orders had been entered which it was estimated would employ the local mills for one-third of the year at their full capacity. Numbers of new railroad projects and extensions of old roads were contemplated, and the chances seemed good for a season of very active railroad building. As the year wore on, however, it was seen that the public were not disposed to look with favor on all new railroad investments, and that many projected schemes could not be floated. Rail manufacturers refused to accept securities for Rails, although considerable work might have been secured in that way without taking very wild risks. Business dragged on slowly, with prices drooping, until April, when the resumption of general repairs by the railroads caused an active demand for Rails in small lots, with an occasional large order. Prices were steady in May and June under a continuation of this class of business. In July a heavy tonnage was entered, and for a time it seemed that the demand for Rails would at least equal that of any previous year, but the movement proved to be only spasmodic, and was succeeded by an interval of quiet in August. During the fall months considerable business was secured from roads hastening the completion of track repairs before the advent of winter, but the railroad companies were in no haste to place orders for 1891 delivery. The tight money market in November and December still further unsettled trade, the year closing with prices at their lowest. The new mileage in the Northwest for the year 1890 is placed at 1047 miles by the *Railway Age*, against 6080 miles for the whole country. In 1889 the total new mileage was 5200. The course of the local Steel Rail trade

during the year is indicated in the following table of average monthly prices at Chicago:

Months.		Months.	
January	$37.75	July	$34.50
February	38.00	August	33.50
March	36.50	September	33.50
April	35.50	October	32.50
May	35.00	November	31.50
June	35.00	December	31.00

Merchant Steel.

A peculiar feature of the trade of 1890 was the widening of the gap between Iron and Steel Bars. In 1889 Steel seemed to be in a fair way to supplant Iron for all ordinary purposes, but in 1890 the demand for Steel was too great to permit it to reach the low prices of the previous year and Iron again came in favor, except among those manufacturing consumers who were in quest of the greatest strength combined with extreme lightness. Implement manufacturers purchased and consumed more Steel than ever before, and advanced prices did not check them. The contracts of this character placed during the season of 1890 exceeded everything before known. The most important event to the trade that occurred during the year was the consolidation of the manufacturers of harvesting machinery, which fuses many buyers of Steel into one body. Other manufacturers of farm machinery are expected to follow the example of the harvesting machine makers. The following table shows the course of prices in leading varieties of Steel, averaged monthly from weekly quotations, for mill lots at Chicago:

Months.	O. H. Spring. Cents.	O. H. Machinery. Cents.	Ordinary Tool. Cents.
January	2.85	2.85	7.50
February	2.85	2.80	7.50
March	2.75	2.75	7.50
April	2.80	2.75	7.50
May	2.80	2.70	7.50
June	2.60	2.60	7.00
July	2.60	2.60	7.00
August	2.60	2.65	7.00
September	2.85	2.65	7.00
October	2.85	2.65	7.00
November	2.70	2.65	7.00
December	2.70	2.65	7.00

Old Material.

All classes of Old Material commanded good prices for the greater portion of 1890. Old Iron Rails were especially high, at no time receding to the low figures of the previous year, when they were sold down to $19.50. The mild winter of 1889–90, with its very light snowfall, had enabled track repairs to be made during the whole time, so that the supply of Old Material was more continuous and steady than usual, and to this cause can be imputed much of the steadiness in prices. It was not until the latter part of the year that the supply began to exceed the demand, causing prices to droop. The course of this branch of trade is shown by the following table of monthly averages of prices in the leading classes of Old Iron, Old Rails being quoted per gross ton and the other classes per net ton:

Months.	Old Iron Rails.	No. 1 Forge Scrap.	No. 1 Mill Scrap.	Cast Scrap.
January	$26.00	$20.50	$16.50	$14.00
February	25.00	19.50	16.50	13.50
March	23.75	19.00	15.50	13.50
April	23.00	18.50	14.50	13.00
May	22.50	18.00	14.00	13.00
June	25.00	19.00	15.50	13.00
July	26.00	20.00	16.00	13.00
August	26.50	20.50	16.50	14.00
September	27.00	21.00	16.50	13.50
October	26.50	21.00	16.00	13.50
November	25.50	20.50	15.50	13.50
December	23.50	19.00	14.50	13.00

Henry Hastings, of 126 State street, Boston, will in the future represent L. G. Bratt & Co., of Gathenburg, manufacturers of Swedish Iron, whose representatives for many years were Lewander & Co, of Boston.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 30, 1890.

Pig Iron.—The year now closing is notable as being the one in which the production of Iron has not only been the greatest in this country, but greater than was ever attained in any other country. The output during 1890 will average about 9,200,000 gross tons—or, in round numbers, 30,000 tons for each working day of the year. What is still more remarkable is the fact that even this enormous supply has not been very much out of proportion to current requirements. There are not sufficient data upon which to base definite figures, but it is reasonably certain that stocks on hand to-day are no greater in proportion than they have been for several years past. It is not unlikely that Iron has accumulated during the past month or six weeks, and will probably accumulate still further, but the time is approaching when the renewal of consumption will prevent any material increase of stocks. There is already a manifest disposition to inquire for prices, deliveries, &c., and buying will undoubtedly become very active in the near future. The main difficulty is to satisfy buyers that bottom figures have been reached; that accomplished, the rest will be comparatively easy. How low are prices going, and where is the bottom? That question no one can answer until the turn comes; but prices are going to be very low—lower perhaps than most people expect. Prices are already low, but buyers are not taking hold, meanwhile stocks are accumulating and cost of production is being reduced. Coke is lower, Ores will be lower, and in other directions cost is being cut down, so that to some extent makers of Pig Iron will be in a position to meet buyers' requirements. But competition will be the controlling influence. If the output of Pig Iron is beyond consumptive requirements prices will keep on declining until the supply is in proportion to the demand, and nothing can prevent it. What the immediate position is in this respect no one can tell for certain, but it is feared that the output of Pig Iron is a little beyond requirements. A very large consumption is regarded as certain, probably only a very slight falling off from last year, but the tendency has been to steadily increase production, and it is the knowledge of this fact that keeps large buyers out of the market. The position will begin to develop very soon, however, and the strength or weakness of the market put to a test. To-day's prices are about $2 ℔ ton lower on Foundry Iron than they were a year ago, but Mill Irons are $3 lower, and are still relatively weaker than the first mentioned. It will be noted, however, that the first five months of the year developed a good deal of weakness in Pig Iron, prices declining to very near the figures now ruling. Subsequently there was some recovery, but practically prices during the last eight months of the year show very little change, and were very close to those quoted to-day, so that notwithstanding the shrinkage in other directions prices of Pig Iron have been well maintained. Quotations for standard Pennsylvania Irons during the first week of each month throughout 1890 were as follows:

No. 1 Foundry.

January	$20.00		at tide.
February	20.00		at tide.
March	20.00		at tide.
April	19.00		at tide.
May	18.00	@	$18.50 at tide.
June	18.00	@	18.50 at tide.
July	18.00	@	18.50 at tide.
August	18.00	@	18.50 at tide.
September	18.00	@	18.50 at tide.
October	18.00	@	18.50 at tide.
November	18.00	@	18.50 at tide.
December	18.00	@	18.50 at tide.
January 1, 1891	17.50	@	18.00 at tide.

Gray Forge.

January	$18.00		at tide.
February	17.50	@	$18.00 at tide.
March	17.00	@	17.50 at tide.
April	16.50	@	17.00 at tide.
May	15.50	@	16.00 at tide.
June	15.50	@	16.00 at tide.
July	15.50	@	16.00 at tide.
August	15.25	@	15.50 at tide.
September	15.25	@	15.50 at tide.
October	15.25	@	15.50 at tide.
November	15.25	@	15.50 at tide.
December	15.25	@	15.50 at tide.
January 1, 1891	14.50	@	15.00 at tide.

In regard to Southern Irons it may be remarked that they are no longer regarded with as much apprehension as they were some time ago. They are, of course, an important factor, but competition with them is not confined to any particular district. Southern furnaces are so located that they can ship to whichever market offers the best inducements, hence their field is practically the entire country. They influence prices in Pittsburgh, Cincinnati, St. Louis or Chicago as much as in Philadelphia, so that their mission is to equalize prices and to exercise a wholesome restraint against unduly high prices. On the whole, the experience of the trade has been that their competition is not an unmixed evil, as it has done much to enforce, by way of self protection, improved methods and processes, besides enabling consumers to supply themselves with good material at uniformly low prices.

Muck Bars.—During a large portion of the year there was an excellent demand for Muck Bars, and comparatively high prices were realized. Prices at the commencement of each month during the year, for deliveries in Philadelphia or its equivalent, were as follows:

January	$32.00	@	$32.50
February	33.00		
March	32.00	@	32.50
April	30.00		
May	28.50	@	28.75
June	29.00	@	29.50
July	29.50	@	30.00
August	30.00	@	30.50
September	30.50	@	31.00
October	30.00	@	30.50
November	30.00		
December	29.00		
January 1, 1891	28.00	@	28.25

Manufactured Iron.—The year 1890 may be called the banner year for Finished Iron. An enormous demand was developed during the spring and summer months, and it is only recently that the mills have been able to catch up with their orders. Prices on the whole were very satisfactory. They were not high, but there was plenty of business, so that mill owners were in a position to work economically, and the result of the year's business ought to be remunerative to all concerned. There was probably no time in the history of the trade when the demand was of so diversified a character. Everybody seemed to be using Iron, and everybody working in Iron had all they could do. The most important interests, or, at all events, those who ordered the largest lots at a time, were car builders, bridge builders, ship builders, pipe makers and architects, but the smaller class of consumers, in the aggregate, took enormous quantities. Prices during the greater portion of the year were fairly steady, commencing at comparatively high figures, steadily receding during the first six months, gradually regaining what they had lost during the next four months, and again declining during the last two months, leaving off at about the same figures as were current during the month of May, which were the lowest of the year. The output during the summer months was somewhat restricted by the heat, but was still more affected by the suspension of work for some weeks at several large mills, causing a shortage in the local supply of nearly 100,000 tons. The decease of two of the

oldest Bar Iron manufacturers in the East, (James Rowland and Stephen Robbins), and the closing of their mills, also added to the scarcity of Iron during the summer months, and served to perpetuate activity almost up to this date. The local capacity for production is now larger than it was a year ago, however, the Robbins mill having been bought and put in operation by Hughes & Patterson. The Chester—now the Wellman Iron and Steel Company's plant—has been largely increased, while at Coatesville the Lukens Iron and Steel Company have made theirs the largest Plate mill in the country. On the Schuylkill the Pencoyd, Phœnixville, Pottstown and Pottsville companies have made important additions, and at Reading the Reading Rolling Mill Company have put in operation a very large plant. On the Lehigh an entirely new and admirably equipped mill has been started by the Slatington Rolling Mill Company, so that whatever the demand may be during the coming year there is not much danger of the capacity being too small. It is feared that the danger will be in the other direction. Prices during the year have not varied to any great extent; 25¢ ℔ 100lb would cover the extreme fluctuations from the highest to the lowest. Steel has averaged about 15¢ higher than Iron, but in some cases they have sold at equal figures. In other instances, in which requirements were very strict, 30¢ to 40¢ more has been paid; all depends on quality. The general course of the market will be shown by the following figures (for Iron), delivered in Philadelphia or its equivalent:

	Bar Iron.	Grooved Skelp Iron.
January	1.95¢ @ 2¢	1.95¢ @ 2¢
February	1.90 @ 1.95	1.95 @ 2
March	1.90 @ 1.95	1.90 @ 1.95
April	1.90 @ 1.95	1.80 @ 1.90
May	1.80 @ 1.90	1.80 @ 1.85
June	1.80 @ 1.85	1.75 @ 1.80
July	1.82½ @ 1.87½	1.75 @ 1.80
August	1.80 @ 1.85	1.77½ @ 1.82½
September	1.85 @ 1.90	1.85 @ 1.90
October	1.85 @ 1.90	1.95 @ 2.00
November	1.90 @ 1.95	2.00 @ 2.05
December	1.85 @ 1.90	1.95 @ 2.00
January, 1891	1.80 @ 1.85	1.80 @ 1.85

	Ordinary Plates.	Angles.
January	2.30¢ @ 2.35¢	2.30¢ @ 2.35¢
February	2.30 @ 2.35	2.30 @ 2.35
March	2.25 @ 2.30	2.25 @ 2.30
April	2.20 @ 2.25	2.20 @ 2.25
May	2.10 @ 2.15	2.15 @ 2.20
June	2.05 @ 2.10	2.15 @ 2.20
July	2.10 @ 2.15	2.15 @ 2.20
August	2.20 @ 2.25	2.20 @ 2.25
September	2.25 @ 2.30	2.20 @ 2.30
October	2.25 @ 2.30	2.20 @ 2.30
November	2.25 @ 2.30	2.20 @ 2.30
December	2.15 @ 2.25	2.15 @ 2.20
January, 1891	2.10 @ 2.20	2.10 @ 2.20

Steel Rails.—The Steel Rail trade during 1890 has not been very satisfactory. Prices commenced at $35, but have been continuously weak, showing a decline of about $8 ℔ ton for the year. The outlook is too unsettled to permit of any very definite remarks in regard to the coming year, as the companies are still negotiating and may yet arrive at some conclusion which will obviate further demoralization in prices. A meeting of the parties in interest is now in progress, so that pending some definite information further comment is postponed. The range of prices during the year is shown by quotations in force at the beginning of each month during the year, which at mills were as follows:

January	$35.00
February	35.00
March	35.00
April	34.00 @ 34.50
May	33.00 @ 33.50
June	31.50 @ 32.00
July	31.50 @ 32.00
August	31.50 @ 32.00
September	31.00 @ 31.50
October	31.00
November	30.00
December	28.00
January, 1891	28.00

Steel Billets.—A very heavy business has been developed in this branch of business, although prices have at times been somewhat wild, especially during the early portion of the year. The general course of the market will be shown by the following quotations, which are a fair average of the market on the first of each month:—

	Billets, delivered.
January	$37.00
February	38.00
March	35.00 @ 35.50
April	31.00
May	30.50 @ 31.50
June	32.50 @ 33.00
July	33.00 @ 34.00
August	33.50
September	33.00 @ 33.50
October	32.00
November	30.25 @ 31.00
December	29.50 @ 30.00
January, 1891	27.50 @ 28.00

Old Rails.—The Old Rail trade is almost a thing of the past. Sales have been mostly for deliveries at interior points, the supply coming from roads near to the mills. Very few Rails have been imported, and still fewer are likely to be imported in the future. Prices have been almost continuously on the down grade until about June, after which there was some recovery; but at this writing there is very little demand at any price. Seaboard quotations have ranged as follows:

January	$28.50 @ $29.00
February	28.00 @ 28.50
March	26.00 @ 26.50
April	26.00
May	23.50 @ 24.00
June	24.50 @ 25.00
July	25.50 @ 25.75
August	26.00 @ 27.00
September	26.00 @ 27.00
October	26.00 @ 26.50
November	26.00 @ 26.50
December	25.00 @ 25.50
January, 1891	24.00 @ 24.50

Scrap Iron.—The demand for Scrap during the year was very satisfactory on the whole, and with comparatively slight change in prices. As with most other articles, prices commenced at the highest of the whole year, declining pretty steadily until midsummer, after which date there was some recovery, but nothing important. The course of the market is shown by the following quotations:

No. 1 Scrap, Philadelphia.

January	$26.00
February	24.50 @ $25.00
March	24.00 @ 24.50
April	22.50 @ 23.50
May	22.00 @ 23.00
June	21.50 @ 22.00
July	21.50 @ 22.00
August	22.00 @ 22.50
September	21.50 @ 22.00
October	22.50 @ 23.00
November	23.00 @ 23.50
December	22.50 @ 23.00
January, 1891	22.00 @ 22.50

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, }
PITTSBURGH, December 30, 1890. }

There has been no material change in the local Iron situation during the past week; business continues extremely dull. Many of our manufacturers will be engaged during the next couple of weeks in taking stock and making repairs, and business in the meantime is expected to continue much as it is.

Pig Iron.—The dullness noted in our last report continues. Consumers are refusing to buy a ton more than is sufficient to supply their immediate wants, and while a good many furnace men are making no effort to sell, and some are refusing to accept present prices, there are others again whose financial necessities compel them to accept the best offers they can obtain, as they need money. It is this class that is cutting the life out of the business at the present time. The Coke operators have agreed to reduce the price of Coke, commencing with January 1, and it is probable the railroads will reduce the cost of transportation. This will help the valley furnacemen considerably, but it is feared that they will now make a corresponding reduction in the price of Pig Iron and give the consumer the benefit of the reduced cost of production, instead of making the best of it for themselves. The market, in addition to being very dull, continues weak, and prices since the date of our last report have further declined, Bessemer Iron having gone off the most. Standard brands of Mill Iron, while very dull, appear to be holding in value better than any other grade. We quote prices as follows:

Neutral Gray Forge	$14.50	@ $14.75.	cash.
All Ore Mill	15.00	@ 15.50,	"
White and Mottled	14.00	@ 14.25,	"
No. 1 Foundry	16.75	@ 17.00,	"
No. 2 Foundry	15.75	@ 16.00,	"
No. 3 Foundry	15.25	@ 15.50,	"
No. 1 Charcoal Foundry	23.00	@ 23.50,	"
No. 2 Charcoal Foundry	21.00	@ 22.00,	"
Coal Blast Charcoal	26.00	@ 28.00,	"
Bessemer Iron	16.00	@ 16.25,	"

While there have been no sales reported here below $16, cash, it is reported that for near-by delivery it can be bought from some of the valley furnaces at $15.75, cash, delivered in Pittsburgh.

Muck Bar.—There is scarcely any demand, and with no sales reported it is difficult to give reliable quotations. We hear of offers to sell at $28.50 @ $29, and it is probable that a bid of $28 would be accepted, as there are some firms anxious to sell and buyers are very hard to find at present. A couple of months ago buyers were much more numerous than sellers now the situation is reversed.

Manufactured Iron.—There is very little new business offering, but many of the mills still have about all they can do working up old contracts. Within the past few days money has been easier, and if it only continues, as now appears probable, there is no good reason why there should not be an improved demand for all kinds of Finished Iron before the new year is very far advanced. Prices continue weak, in sympathy with raw material, but during the past week there has been no quotable change.

Nails.—The Cut Nail trade continues extremely dull, and there is not likely to be any improvement until the spring trade opens up. Most of the Cut Nails being sold in this market are made at Wheeling. It is said that Nails can be laid down here from Wheeling at $1.65 @ $1.70, in car lots, 60 days, 2 % off for cash. Wire Nails, also, are less active and weak, and while the price quoted is $2.10, at makers' mill, it is intimated that a desirable order could be placed below the price named.

Manganese — Continues exceedingly dull; consumers are buying only as their necessities require. Small sales of 80% Domestic at $65 @ $66 for immediate or near-by delivery Brokers report that they are doing little or nothing in foreign—even if they could cut the price quoted they can find no demand.

Wrought Iron Pipe. — No change whatever in prices. Not much new business reported, but mills are busy working up old contracts.

Old Rails.—The dullness noted for some weeks past continues, and in the absence of sales it is difficult to quote prices correctly. Old Iron may be quoted nominally at $25 @ $26, and Old Steel at $17 @ $18. It is doubtful whether sellers could be found at inside quotations, but it is difficult just now to find buyers at any price.

Billets and Slabs.—Demand for Steel Billets continues light and prices are weak, with little or nothing doing. May be quoted nominally at $25.50 @ $26. A sale of Nail Slabs is reported at $26, on cars at makers' mill.

Wire Rods—Continue very dull, and prices have further declined. Now being offered at $37.50 at maker's mill here, and it is probable could be bought for less. There appears to be no demand. One firm here reports having some contracts yet to fill, and they were made some time ago, when prices were much better than they are at present.

Structural Iron.—There is a fair business, but prices are weaker, and we reduce our quotations slightly: Channels and Beams, 3.10¢; Angles, 2.20¢; Steel Bridge Plates, 2.45¢; Universal Mill Plates, Iron, 2.25¢; Refined Bars, 1.90¢ @ 1.95¢.

Steel Plates.—Prices are lower: Fire Box, 4¢ @ 4.25¢; Flange, 2.90¢; Shell, 2.70¢, and Tank, 2.35¢.

Merchant Steel.—Business continues light and prices easy, but without quotable change.

Railway Track Supplies.—Railway Spikes have been reduced to $2.10 for either Iron or Steel, 30 days, f.o.b. at makers' wharve; Splice Bars and Track Bolts remain unchanged.

Steel Rails.—There has been no new business. The Edgar Thomson Works still working on old contracts.

Old Material.—There is no demand, and the market is reported considerably demoralized, as there is a good deal offering and very few buyers. It is impossible to quote prices with any degree of correctness in the present condition of the market. It is probable there will be an increased demand next month.

Connellsville Coke.—A reduction in prices has been made, to take effect January 1, when they will be as follows, on cars at ovens, Furnace Coke, $1.90; Dealers, $2.15; Foundry Coke, $2.30; Crushed Coke, $2.50 to dealers and $2.65 to consumers. Now the railroads will be asked to reduce freight rates.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, December 29, 1890.

Pig Iron.—There is no special change to note in the condition govering this department since our last report. The last two weeks of the year are naturally looked for as an unusually dull period, and the week just closed has not proved an exception to the rule. The miners and furnacemen seem unable to settle their differences, and the strike is in about the same condition as noted one week ago. The output has been curtailed somewhat by the shutting down of several important furnaces. This fact, while it has not had any immediate effect on prices, is more than likely to have before many days, as consumers will shortly begin negotiations with a view of replenishing their already depleted stocks. During the week sales have been of a limited character. Christmas Day coming in the middle of the week has upset business in nearly every department, and sales agents are not looking for any large orders until after the advent of the new year. Prices as quoted below show the basis on which Iron can be bought to-day, and are for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.50 @ $16.00
Southern Coke, No. 2 Foundry,	14.50 @ 15.00
Southern Coke, No. 3 Foundry,	14.00 @ 14.50
Gray Forge	13.50 @ 14.00
Southern Charcoal, No. 1 Foundry	17.25 @ 17.75
Southern Charcoal, No. 2 Foundry	16.75 @ 17.25
Missouri Charcoal, No. 1 Foundry	16.00 @ 16.50
Missouri Charcoal, No. 2 Foundry	15.25 @ 15.75
Ohio Softeners	17.75 @ 19.25

Bar Iron.—The market remains in about the same condition as last noted; small lots have been the rule, and for these full prices have been obtained. Mills are looking for a large spring trade, and are shaping their business so as to be in a position to meet it. Lots from mill are quoted at 1.77½¢ @ 1.80¢; small lots from store are quoted at 1.90¢.

Barb Wire.—With a regularity that is remarkable orders continue to come in, and mills are enjoying a prosperity that is unusual at this period of the year. The trade from Southern points has been heavier this month than for years, and the volume of business transacted will compare favorably with the best months on the books. Prices are maintained on a basis of 2.80¢ for Painted, with 60¢ additional for Galvanized. Carload lots are quoted 5¢ ℔ cwt. less than above prices. Should the present activity continue, it is more than likely that prices ruling to-day will be withdrawn and a higher range of values substituted.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, December 29, 1890.

Pig Iron.—The Pig Iron market remains practically the same. We notice no particular revival either in prices or demand. The rounding up of the year's business with all consumers appears to act as a damper to anything like energetic effort at buying new material, and the uncertain condition of many concerns appears to act as a barrier against solicitation of business. The uncertainty of the movements of the miners in the Alabama district is still embarrassing the furnaces, which precludes active and energetic management on their part; and in fact it appears to be the policy of all producers and manufacturers to keep as near shore as possible, although the past week has presented a little clearer atmosphere in financial circles than for some time previous. There are, however, some large consumers who are acting a little bolder than the rest, by asking for quotations for the coming year in large round lots, but to which the furnaces, as a general thing, are failing to respond, as present prices are rock bottom figures, hardly giving to the furnaces a new dollar for an old one. There have, however, been several contracts let at very low prices, for delivery through January and February, and three large concerns have purchased round lots aggregating 40,000 tons, for monthly deliveries running up to July 1. Financially, the outlook is better than in the past; it is thought that the strike cannot continue much longer, and that its effects will prove rather disadvantageous to the miners than otherwise. In some of the mines negro labor has interposed to such an extent as to be a great relief to the furnaces, and it is generally thought that this class of labor will hereafter be largely utilized in the mines; and indeed many of them have declared their intention of using it exclusively in future. Prices are irregular and depend somewhat upon the character of payments. It is the general opinion that the next two or three weeks will develop a better state of things than has existed in the immediate past.

Cleveland.

CLEVELAND, December 29, 1890.

Iron Ore.—All energies are now united in the effort being made to clear away the mountains of Ore on lower lake ports before the beginning of another season. Over 3,750,000 tons of Ore remains to be forwarded. Something like 100 25-ton carloads are being sent on from Cleveland every day, but even this drain upon the supply will not clear the docks before May 1, 1891. A thorough canvass of the Ore offices in this city fails to reward the searcher for information. There seems to be absolutely nothing new. One or two dealers complain that they are having trouble with a few purchasers who are frightened over the dullness in the Iron market. This continued dullness has also had the effect of cutting off the inquiries for Ore to be shipped by rail during the winter, and there is little talk of any sales of this nature at present. Owners of mines in the Menominee district deny that there have been any negotiations for 1891 Ore, much less that any sales have been made.

Pig Iron.—The market is thoroughly lifeless, a result that is perhaps not unnatural in the middle of the holiday season. Not a dealer in the city will say that any business has been done during the week just closed, although there is a disposition to keep up appearances and look forward with all the confidence possible to next month. Although prices are evidently weak, dealers claim that Bessemer cannot be purchased at the valley furnaces for less than $17, and that sales will not be made until that figure is realized.

Manufactured Iron.—Scarcely anything is being done. Bar is quoted at 1.70¢ @ 1.75¢, but the market is very weak.

Scrap.—So little is being done that it is superfluous to give quotations. No. 1 Wrought Scrap is worth $20 @ $20.50, but nothing else is moving at all.

Old Rails.—There has probably been a sale or two of Old American Rails at $24.50 @ $25, but the market is weak and prices declining.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date December 29, 1890, say: Very little has occurred to cause any change in the situation here as regards the Iron market. Buyers are still holding off until after the first of the year, although a few sales of 300 to 500 tons of Lake Superior Charcoal have been made at regular prices. Southern Irons have not been in demand, and prices have not become any firmer, notwithstanding the strike of the miners in the Birmingham district. The inquiry for Silveries has not been up to the average. Most furnacemen are not pushing sales, realizing that it is useless to expect much change before the middle of January. With prices reasonably firm and a light demand, we quote as follow:

Lake Superior Charcoal, all numbers	$19.50 @ $20.00
Lake Superior Coke, Bessemer	18.50 @ 18.75
Katahdin (Maine Charcoal)	23.50 @ 24.00
Lake Superior Coke Foundry, all ore	18.00 @ 19.00
Ohio Blackband (40 per cent.)	18.25 @ 18.75
Southern No. 1	16.00 @ 16.50
Southern Gray Forge	14.25 @ 14.75
Jackson County (Ohio) Silvery,	18.50 @ 19.00
Connellsville Coke	4.65 @

Imports.

Hardware, Machinery, &c.

Barbour Bros. & Co., Mach'y, pgs., 33
Botany Worsted Mills Company, Mach'y, pgs., 20
Boker, Hermann & Co., Chains, cks., 18; Mdse., cs., 14; Arms, cs., 13
Curley, J. & Bro., Cutlery, cs., 2
Downing, R. F. & Co., Arms, cs., 4; Stoves, cs., 10
Downs, Wm., Mach'y, pgs., 9
Field, Alfred & Co., Mdse., cs., 8
Godfrey, Chas., Arms, cs., 4
Hampton, J. W., Jr., & Co., Gun Barrels, cs., 14
Pim, Forwood & Co., Printing Mach'y, cs., 28
Morris, L. W. & Son, Mach'y, cs., 2
Moss, F. W., Files, cks., 4
Schoverling, Daly & Gales, Arms, cs., 18
Sheldon, G. W. & Co., Mach'y, cs., 9
Somerset Pattern Works Company, Mach'y, cs. and pgs., 9
Werlemann, H., Arms, cs., 13
Wiebusch & Hilger, Hdw., cks., 3; ditto, cs., 8; Anvils, 112; Mdse., cs., 6
Wright, Peter & Co., Arms, cs., 5
Wyman, Chas. H. & Co., Arms, cs., 30
Order—Mach'y, pgs., 8

The Woodstock Iron Company of Anniston, Ala., will soon bank one of their furnaces. The two other furnaces are out

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, December 31, 1890.

The local market is stagnant, and is dependent for its sensations chiefly upon Pittsburgh and Wheeling, which seem to have become the areas of greatest depression, apparently because somebody can be found who will buy at a price.

American Pig.—Although it is reported that a certain amount of business has been done in contracts for delivery next year, the price is supposed to be dependent upon the Lehigh opening prices. The reports from the South note the banking of additional furnaces, and yet it is stated by excellent authority that the strike will soon collapse because the men are beginning to feel the strain sharply. The market has certainly not responded. On the contrary, reports of exceedingly low sales in the Birmingham district, notably of low grades, are frequent. In spite of alleged low cost of production financial stringency seems to compel some of the concerns to realize at any price. We quote $16.75 @ $17.50 for No. 1, $16 @ $16.50 for No. 2 Northern Iron. Southern may be quoted $16.50 @ $17 for No. 1 Foundry, $15.50 @ $16 for No. 2 and $14 @ $14.50 for No. 3. Forge has sold as low as $9.25 at Birmingham.

Spiegeleisen and Ferromanganese.—In Ferromanganese second hand lots continue to demoralize the market, which we quote $62 @ $62.50, while Spiegeleisen remains absolutely featureless at nominally $29 @ $29.50.

Steel Rails.—The probability that very low prices will reign unless some arrangement is arrived at has again brought the mills together, in spite of the collapse of the scheme last week. Meetings have been held on Monday and Tuesday, but at this writing nothing definite has been arrived at. Concessions are being demanded and refused, and the temper of those carrying on the negotiations is not supposed to be such as to give very much hope of a successful consummation of the matter. One mill is reported to have on its books about 30,000 tons, including 13,000 tons for one coal road, a round block for another, one 3000 and one 2000 ton lot for New England, all of them "protecting the buyer against a decline." We may note the sale by another Eastern mill of 8000 tons at private terms. In view of pending negotiations, the market is unsettled and difficult to quote. What the Steel Rail trade may come to may be inferred from the condition of the Western Billet market, where prices are down to $25.50.

Billets and Rods.—In the East the market is very dull, prices for Billets being nominally $28.50 @ $29, delivered. In the West the market has receded to $25.50, at which sales have been made. Rods are nominally $40.50 @ $41 at Eastern sellers' mill, while $37 is quoted at the West. Foreign are nominally $42.50 @ $43.50, with nothing doing for re-export trade.

Rail Fastenings—An order for the Fastenings for 11,000 tons of Rails for the South has been placed at low figures. We quote Spikes, $1.90 @ $2, Angles, 1.65¢ @ 1.75¢, and Bolts and Nuts, 2.75¢ @ 3¢, delivered.

Manufactured Iron and Steel—The market is very dull, only a few small orders for Beams and Structural Iron having been closed. We note also the placing of the material for a tugboat. In the near future a contract is expected to be closed for a vessel for the Standard Oil Company. The market is weaker. A large consumer claims to be able to buy Angles at a shade under 2¢, delivered. We quote Angles 2.05¢ @ 2.10¢; Sheared Plates, 2.20¢ @ 2.25¢; Tees, 2.6¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 2.25¢ @ 2.30¢ for Tank, 2.55¢ @ 2.65¢ for Shell, and 2.85¢ @ 3¢ for Flange, on dock. Bars are 1.75¢ @ 1.9¢, on dock.

Thomas W. Stiles & Co., Pig Iron, Old and New Rails and Iron Ore, have moved to 44 Wall street.

Metal Market.

Copper.—The situation in the market at this time is practically the same as it was a week ago. Consumers have manifested no great inclination to provide for future wants, at all events, and no further concessions on prices have been openly made by the leading producers. To all accounts, consumers, having no faith in prices going higher under current heavy output from the mines, and the restriction upon consumption caused by the condition of general finances, are inclined to a conservative course. Lake Superior product is generally quoted at 15¢ to the home trade, but it is an open secret that orders have been taken for deliveries over the early part of the new year at 14¾¢, or less, to a moderate extent. At the close Tuesday there were some buyers at 14¼¢. Arizona is quoted at 13¾¢ @ 14¢, but could probably be bought a shade lower, and concessions on 13¢ for casting brands would probably be made.

Pig Tin.—The market has been dull and prices have ruled lower, in the absence of any turn in the foreign market advantageous to local holders. More Tin has arrived and is due at an early date than all the holders can conveniently take care of. This fact has had its effect, operating to wipe out the late premium paid for early deliveries, besides causing some pressure to sell. Speculative operations during the week have been chiefly in old contracts, and purchases for trade account and consumption have continued moderate. At the moment 19.95¢ appears to be full value for 5 to 10 ton lots on the spot. January delivery has been sold at 19.95¢, and on Tuesday's call was quoted at 19.85¢ bid, 19.95¢ asked. Later deliveries were 20.10¢ @ 20.20¢ for February and 20.10 @ 20.25¢ for March. Jobbing quantities about 20¼ @ 20¼¢ out of store.

Pig Lead.—Operations have been on no larger scale the past week than during the week preceding, as there are no evidences of any change in the general situation save that the higher cost to import foreign Lead has stiffened sellers' ideas of value in some degree. There is no visible improvement in the demand from consumers or from other quarters at all events, and bids are no better except possibly on single carload lots for delivery some little time ahead. Early deliveries are quoted at 4.10¢ @ 4.15¢. February was 4.10¢ bid and March 4.12½¢ bid, with sellers holding for 4.20¢ @ 4.25¢. The Western market is apparently somewhat firmer, with 3.90¢ @ 3.95¢ quoted from St. Louis.

Spelter.—Under the influence of somewhat freer offerings for early shipment, and limited demand, the market for Western Spelter is rather weaker. Carload lots may now be secured at 5.85¢ @ 5.90¢, according to time of shipment. Spot stock, however, is still quoted at 6¢ upward, the supply here being very moderate.

Tin Plate.—Business in Tin Plate has been on a moderate scale and the market is unsettled, with spot stock at least 15¢ ℔ box below the prices at which futures can be obtained. Thus, $5.10 @ $5.15 is openly quoted for ordinary Coke finish Bessemers, with a probability that cash offers of $5 would be accepted, while futures are held at $5.20 @ $5.25. Quotations for large lots on the spot are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.15; J. B. grade, do., $5.20. Bessemer do., $5.10 @ $5.15. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.40; Siemens Steel, IC basis, $5.45 @ $5.50; IX basis, $6.50. IC Charcoals—Melyn grade, $6.12½; for each additional X add $1.50; Allaway grade, $5.75; Grange grade, $6; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.40 @ $5.45; 20 x 28, $10.50; M. F., 14 x 20, $7.87½; do., 20 x 28, $16; Dean, 14 x 20, $5; do., 20 x 28, $10.25; D. R., D. grade, 14 x 20, $4.75; do., 20 x 28, $9.50; Mansel, 14 x 20, $4.90; do., 20 x 28, $9.85; Alyn, 14 x 20, $4.90 @ $5; do., 20 x 28, $9.87½; Dyffryn, 14 x 20, scarce; do., 20 x 28, $10; Wasters—S. T. P. grade, 14 x 20, $4.60; do., 20 x 28, $9.25; Abercarne grade, 14 x 20, $4.55; do., 20 x 28, $9.25.

Antimony.—The demand has been chiefly of a retail character and prices still have a leaning in buyers' favor, although showing no radical change. About 18¾¢ for Cookson's, 17¢ for L. X. and 16¾¢ for Hallett's fairly reflect present market values.

New York Metal Exchange.

The following sales are reported:

MONDAY, December 29.

10 tons Tin, January ..... 19.95¢

TUESDAY, December 30.

10 tons Tin, January ..... 20.00¢
25 tons Tin, January ..... 20.05¢

Coal Market.

The continued scarcity of Bituminous Coal, together with sharp winter weather, has quickened the demand for all sizes of Anthracite, and the market has a better tone. Prices, however, are nominal in the absence of any recognized schedule The Philadelphia *Ledger* says: "The Iron manufacturers continue to absorb all of the Furnace Coal that is being manufactured, and they are compelled to accept some broken size to make up their orders. There will be fewer unfilled orders for Anthracite cancelled at the end of this month than there have been for several months past, and the requests of the dealers and large consumers are now more urgent for the fulfillment of their contracts." Reported production for the week ending December 20, 728,000 tons, and since January 1, 34,930,324 tons, compared with 34,723,374 tons for the same period last year, an increase of 206,950 tons.

Bituminous Coal is active and in short supply, despite the heavy production. Both in New York and in the Eastern States there is a demand for quicker shipments. The new agreement of the Seaboard Association, to take effect March 1, is said to be of an ironclad character, requiring a money forfeit of at least 10¢ ℔ ton and an oath bound statement from each shipper respecting the amount of tonnage and actual net selling price. But as yet there is no final action.

The Philadelphia and Reading Coal and Iron Company's annual report shows that during the year the company greatly increased their coal production, mining about 700,000 tons more than the previous year. Of the coal mined, 7,571,446 tons were shipped over the Philadelphia and Reading Road, an increase in the shipments of 407,011 tons. The quantity in store is about 150,000 tons, principally Buckwheat and Pea. Of the 48 collieries 32 were worked full time. The capacity of the 48 collieries is 30,000 tons a day, and 27,000 men are employed. The men's working time compared with that of last year a little above the average. Three new breakers were erected.

The United Mine, one of the finest owned by the Frick Coal Company, near Scottdale, Pa., was ignited by an explosion, causing serious damage to machinery and other appliances.

The result of the conference of the Mahoning and Shenango Valleys furnacemen with the Coke men of the Connellsville region is the announcement that January Coke will sell at $1.90 ℔ ton, instead of $2.15, as at present.

The Pennsylvania Company have decided to construct a system of branch lines for the development of the Coal fields in Cambria County and branches to connect near Cresson.

Pea and Buckwheat are quoted respectively $2.75 @ $3.15 and $1.75 @ $2.10 f.o.b. Stove about $4.15. The coal sales agents met on Tuesday and fixed the January output at 2,500,000 tons, against 2,750,000 tons for the month of December, and 2,281,000 tons last January. It was agreed that the present circular prices should prevail.

Bituminous Coal is very firm at $3.50 @ $3.55. Holders claim that they might get any price asked.

Financial.

Bank officers closely connected with mercantile interests report favorable indications on all sides, pointing to a complete restoration of confidence and to normal conditions in monetary affairs at an early date. One feature especially notable is that despite the recent severe stringency in money, now happily relieved in a large measure, there is less borrowing than is usual at this season of the year. Merchants and traders, instead of selling their paper through Wall street brokers, seek accommodation at the banks, where little difficulty is experienced in ordinary cases. Increasing supplies of money are available in the usual channels for time loans, and there is a better demand for commercial paper. Rates for call loans are higher, owing to the necessities of banks and trust companies in providing for the annual payment of interest and dividends. In banking circles the opinion prevails that growing ease may be expected, liable to contingencies such as may arise from pernicious legislation at Washington. Considerable interest is felt in the meeting of railroad presidents to be held in this city 5th inst. to frame the proposed new agreement. There are as yet six roads which were represented at the Morgan conference which have not yet taken action by their boards of directors, counting the Illinois Central as having assented to the plan as respects its lines West of Chicago. Among partnership changes the reorganization of the firm of Thurber, Whyland & Co. on a plan similar to that initiated by the H. B. Clafflin Company attracts attention. Francis B. Thurber is to be president of the new company, with $2,500,000 capital stock, divided into preferred, $1,500,000; common, $1,000,000. Of the preferred $1,000,000 will be offered to the public.

The stock market is dull and artificial, transactions being limited in volume and possessing little significance. A sharp advance on Monday was described as a liquidation of bear accounts natural to the season. The coal shares were most active, led by Lackawanna, and sugar refineries was unusually strong. Union Pacific was strong on the report that the contractors would receive $300,000 this week for new construction, in refutation of statements that the company were unable to meet current obligations. Silver bullion certificates were alone in not advancing. They closed at 103. On Tuesday there was a smart reaction in half a dozen stocks and a fractional decline through the list, caused by Gould's attempt to break the contract under which the St. Paul and Rock Island roads are using the Union Pacific's bridge at Omaha.

The North River Bank receiver figures out a deficiency of over $420,000, or 25 %.

United States bonds were steady. Quotations as follows:

U. S. 4½s, 1891, registered	103¾
U. S. 4½s, 1891, coupon	103¾
U. S. 4s, 1907, registered	121½
Stamped	119¼
U. S. 4s, 1907, coupon	122½
Stamped	119½
U. S. currency 6s, 1895	109
U. S. currency 6s, 1896	112
U. S. currency 6s, 1897	115
U. S. currency 6s, 1898	118
U. S. currency 6s, 1899	121
Dis. Col. 3-65, 1924	114

Railroad bonds were strong and active. The construction of the Reading Terminal facilities in Philadelphia, it is estimated, will cost $8,000,000, of which about $2,000,000 has already been spent. In bank stocks 15 shares of Western National sold at 97½, and 5 shares of American Exchange at 149½.

Sterling exchange rates have receded below the point at which, theoretically, imports of gold would be profitable, but at this time of the year a demand for sterling exchange bills springs up, owing to purchases of bills by importers of merchandise, so that gold imports at present cannot be expected. Importers imply that if they could be assured that the time for taking goods out of bond would be extended, they would purchase sterling exchange bills more freely at the present time.

The supply of first-class commercial paper is good and there is some inquiry. Rates at 7 % for 60 to 90 days' indorsed bills receivable and 7 % to 7½ % for four months' acceptances. Some business is done at 8 % for the best single names.

The banks gained last week only little more than the net disbursements of the Treasury, so that, after reckoning $1,209,000 more silver notes issued, the Treasury and the banks really hold but a trifle more money than a week ago. While the reported movement of currency to the interior from the banks was little over $1,000,000, substantially the whole of the imported gold, or its equivalent in certificates or other kinds of money, has gone out of sight into the country or elsewhere. The banks are retiring Clearing House certificates rather than adding to them, only $13,202,000 remaining outstanding at the close, and successively better bank statements are having their due effect.

The merchandise markets are generally slow, and prices are barely maintained. Wheat and oats are a fraction lower, and corn receded about 3¢ ℔ bushel compared with a week ago Cotton is down $\frac{3}{16}$¢. Oils are quiet. Provisions steady. Coffee is easier. Sugar unchanged.

The all-rail eastbound shipments of dead freight from Chicago last week were 71,900 tons, against 70,000 tons the previous week, and 102,196 tons the corresponding week of last year.

A review of railway construction during 1890, estimates the number of miles of new track laid at 6080 compared with about 5200 added in 1889, a gain of 850 miles. Over 2000 miles of the year's increase are in the Southern group of States and about 1060 miles of it are in the Southwestern group, in both of which sections railway building has been phenominallyactive.

It is reported that the carrying of a very heavy stock of ore and the slowness with which furnacemen meet payments have made the financial burdens of the lake ore companies very heavy, We learn that at least one block of ore of some magnitude is being offered for resale, and it is feared that low prices will be made on ore from second hands long before the question of contracting for next year's delivery comes up.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, TUESDAY, December 30, 1890.

In the Iron trade business has been very quiet, as usual during the holiday season, and, in the absence of offsetting feature, the movement of prices of warrants has been towards a lower level under the weight of realizations. Scotch sold off to 46/3, Cleveland to 42/ and Hematite to 53/6. The inaction is attributed in part to the closing of the exchanges from Wednesday last until the following Monday, but the absence of new speculative interest, along with light shipments, is not without some effect. In fact, slack demand outweighs other conditions at the present time. The strike of the Scotch ironworkers has been extended, and railway employees threaten to additionally disorganize the trade through efforts in the direction of causing a famine in fuel.

From the Continent the reports are more favorable as regards general conditions. The syndicate of German mills, it is stated, seriously consider an advance in prices of 5 marks on Rolled Iron in January.

The Pig Tin market has been positively dull, and prices have fallen to £90. 10/ for prompt delivery, under the influence of the decline in silver and absence of support.

Copper warrants are firmer and have reacted to £53. 7/6 for prompts, with operations rather livelier than usual during the holiday season, but subsequently reacted.

Prices for Tin Plate remain quite firm, and the demand is remarkably good for the season. For Cokes and Ternes quite large inquiries from the States are noted, but a wide difference in buyers' and sellers' views checks business.

Scotch Pig Iron.—There has been no improvement in the demand, but prices remain very firm, owing to light supply.

No. 1 Coltness,	f.o.b.	Glasgow	..
No. 1 Summerlee,	"	"	69/
No. 1 Gartsherrie,	"	"	..
No. 1 Langloan,	"	"	..
No. 1 Carnbroe,	"	"	51/6
No. 1 Shotts,	"	at Leith	..
No. 1 Glengarnock,	"	Ardrossan	..
No. 1 Dalmellington,	"	"	59/6
No. 1 Eglinton,	"	"	49/

Steamer freights, Glasgow to New York, nominal; Liverpool to New York, 10/.

Cleveland Pig.—In the absence of improvement in the demand, prices are affected by the decline in warrants and makers now quote at 42/6 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—The demand has continued moderate, and prices are again somwhat lower. Makers quote 54/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Makers hold at former prices, and the demand continues fair. English 20 % quoted at 100/, f.o.b. shipping port.

Steel Rails.—Without change in prices, the market is firm and the

demand moderately active. Heavy sections quoted at £4. 17/6 and light sections £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Demand is moderate, but prices are quite steady. Makers quote at £4. 15/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—There is little doing, and makers' prices are unchanged. Bessemer, 2½ x 2½ inches, £5, f.o.b. at N. W. England shipping point.

Steel Slabs.—The market remains very quiet. Bessemer quoted at £5, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Demand is slow and prices are barely steady. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 5/ @ £3. 7/6, f.o.b.

Scrap Iron.—A moderate business, but prices steady. Heavy Wrought quoted at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—Sales continue light and prices are without change. Bessemer quoted at £3 @ £3. 2/6, f.o.b.

Tin Plate.—The demand is rather slower to-day and prices are somewhat irregular. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	18/9 @ 19/
IC Bessemer Steel, Coke finish	@ 17 6
IC Siemens " " "	@ 17 9
IC Coke, B. V. grade	@ 17/
Charcoal Terne, Dean grade	17/ @ 17/6

Manufactured Iron.—Except on Sheets prices are unchanged and the market remains quiet. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Marked Bars				@	9	0	0
" Common "				@	6	15	0
Staff. Bl'k Sheet, singles				@	7	10	0
Welsh Bars (f.o.b. Wales)	6	2	6	@	6	5	0

Tin.—Demand light at the close and prices barely steady. Straits quoted at £90. 7/6 @ £90. 10/, spot, and £91. 2/6 @ £91. 5/ for three months' futures.

Copper.—The demand quieter to-day and prices rather irregular. Mercha n Bars quoted at £52. 15/ @ 53, spot, and £53. 10/ @ 53. 12/6, three months' futures. Best Selected, £60.

Lead.—The market quiet and barely steady, £13 @ 13. 2/6 quoted for Soft Spanish.

Spelter.—Demand is light and prices are easier at £23 for Soft Spanish.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, December 31, 1890.

Reports reach this market that about 15 Coke furnaces in the South have either banked up or blown out, and 10 or 12 Charcoal stacks are also out. This action is more or less due to lack of Coke, the result of the strike at the ovens, and for repairs, but the unsatisfactory state of the market for Pig has either prompted or hastened such action. The Charcoal furnaces especially are suffering from untoward circumstances, the general and wide preference shown for Coke Iron at the difference in price being a potent element shaping the course now pursued, and it is believed that the retirement of such stacks is more or less permanent, or at least until a rebound in the market price allows them an entrance into the field of activity. Up to December 1 stocks of both Coke and Charcoal Iron at furnace yards continued to increase, but the supply of Coke Iron was less than on September 1. The wholesale blowout during the past month, however, must soon make an impression upon the tendency to accumulate, but the light consumption in progress will doubtless retard such a result. Sales here continue small, but there is little effort made to encourage buyers. At the same time, consumers of Pig Metal report a full quota of orders, and inquiries from them during the past week have been more frequent, more determined and for larger amounts for delivery during the first three months of the year. The strain in the money market is less severe and more confidence in Iron is apparent, yet prices do not show any improvement of moment. Quotations unchanged.

Foundry.	
Southern Coke, No. 1	$14.50 @ $15.00
Southern Coke, No. 2	14 00 @ 14.25
Southern Coke, No. 3	13.25 @ 13.50
Ohio Soft Stone Coal, No. 1	17.00 @ 17.50
Ohio Soft Stone Coal, No. 2	16.00 @ 16.50
Mahoning and Shenango Valley	17.50 @ 18.00
Hanging Rock Charcoal, No. 1	21.00 @ 22.00
Hanging Rock Charcoal, No. 2	19.50 @ 20.50
Tennessee and Alabama Charcoal, No. 1	18.00 @ 19.00
Tennessee and Alabama Charcoal, No. 2	18.50 @ 19.50
Forge.	
Gray Forge	12.50 @ 12.75
Mottled Neutral Coke	12.00 @ 12.25
Car Wheel and Malleable Irons.	
Southern Car Wheel	22.50 @ 23.50
Hanging Rock, Cold Blast	24.00 @ 24.50
Lake Superior Car Wheel and Malleable	21.00 @ 22.00

PERSONAL.

Eugene H. Cowles, the inventor of cheap aluminum, is critically ill in Cleveland, Ohio.

H. M. Byllesby, vice president and general manager of the Westinghouse Electric and Mfg. Company of Pittsburgh, has resigned. Mr. Byllesby has been with the company for a number of years, and about a year ago returned from London, where he had been acting as representative of the company. Samuel Bannister, vice-president and general manager of the Fuel Gas and Electric Engineering Company of Pittsburgh, has been appointed to succeed Mr. Byllesby.

C. M. Hobbs, purchasing agent of the Denver and Rio Grande Railroad, delivered an address on "Ethics in Manufacture" at the banquet of the Denver Manufacturers' Exchange.

The board of directors of the Morristown Steel Company have completed their organization by the election of the following officers: President, S. D. Hawley, Philadelphia; vice-president, Addison R. Wright, Annistown; treasurer, Joseph M. Cranston, Philadelphia; secretary, J. Clinton Sellers; superintendent, George J. Humbert.

Rail Freight Rates.

(By Telegraph.)

PITTSBURGH, December 31, 1890.—The freight rate on steel rails from Duquesne and Braddock to East St. Louis and east Mississippi River points has been temporarily reduced from $3.50 per gross ton to $3.11, to go into effect January 3.

A. & P. Roberts & Co. of the Pencoyd Iron Works, near Philadelphia, are building two additional open hearth furnaces. They have also under construction a blooming mill, having hammered their blooms.

The trial of magnetic separators at the Port Henry mines of Witherbee, Sherman & Co. will probably not take place until early in February.

REVIEW OF THE WHOLESALE MARKET IN PAINTS AND OILS.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Trade has been dull all along the line, and the general situation in all departments is practically the same as it was a week ago. Up to this writing no announcement has been made of the expected revision of prices for White Lead by corroders identified with the National Lead Trust, and progress in the direction of revising prices for various Paints that will be more affected by the cost of the pure pigment is therefore rather slow. However, under the present condition of trade the delay is more annoying than serious, as the weather conditions are more or less adverse to success of efforts in the direction of securing orders. In the Oil market there are no particular drawbacks, unless the continued partiality of buyers to a very conservative line of action may be classed as such, and a moderate advance in price is the only new feature in connection with Turpentine.

Paints and Colors.

White Lead, &c.—No change is yet announced in corroders' prices for pure pigment, and the situation of the market for White Lead, Red Lead and Litharge is the same as it was a week ago. Manufacturers of the inferior lines of pigment take no action pending information as to what the corroders will do, and buyers are placing very few and only small orders for any of the several varieties.

Zincs.—The list prices for American Oxide stand at 4½¢ for common, 4¾¢ for good and 5¢ for prime quality, with the usual discount for quantities. Deliveries are still of good volume, but manufacturers have secured few new orders recently, and the jobbing movement has been slow. Foreign brands are firmly held at old prices, but selling in moderate quantities only.

Colors, &c.—Fair purchases of some of the more staple lines of dry Colors have been made by grinders, but the movement in house-painters' Colors has continued slow, and the general market presents the usual features for the season. Ready mixed Paints have also been quiet.

Miscellaneous.—On prices of Chalk, Whiting, Paris White, &c., there have been no changes the past few days, and business has continued slow.

Oils and Turpentine.

Linseed Oil.—Western brands of Linseed Oil are still offered quite freely in this and other Eastern markets at previous low prices, 52¢ and 53¢ being common quotations on moderate quantities, while as low as 50¢ is said to be named on carload lots. City made Oil is held firmly, however, at 58¢ for domestic and 62¢ for Calcutta Seed product, but sales are hardly up to the average, and the impression is that Western Oil is making some inroads upon the city trade through the aid of the low prices ruling.

Lard Oil.—The condition of the market for raw material serves to keep prices for Oil at a low point, but cheapness fails to stimulate business. For that matter, all buying has been of a hand-to-mouth character during the week, and the demand at present is slow.

Sperm Oil.—Crude product is still very firmly held in the East, but some lines of manufactured Oil are offered a trifle cheaper in the local market. The movement at present is moderate.

HARDWARE.

Condition of Trade.

WHILE owing to monetary disturbances December trade, especially in the East, was to a certain extent disappointing, it is conceded that the year's business has been eminently satisfactory and that the year closes with a condition of things which promises well for next season. There has been apparently a restoration of confidence to a large degree, and with improved financial conditions the indications seem to point to an early opening of business in fair volume. The low prices which have prevailed on certain staple goods have had the effect of weakening somewhat the general tone of the market, but it is hoped that the bottom has been touched and that there will be no further weakening, and perhaps an early recovery. Advices indicate that stocks in both retailers' and jobbers' hands are light and that with the continuance of good business throughout the country orders will be coming into manufacturers for at least the usual quantity of goods. Taken all in all, the situation is regarded as very satisfactory.

St. Louis.

(*By Telegraph.*)

The Hardware trade is necessarily limited, as jobbers are busy taking or preparing to take the annual inventory of stock. Traveling men have been called in from the road, and the business transacted is of the mail order character. Painted Barb Wire is selling freely at $2.75 for carload orders; Wire Nails are quoted at $2.25, f.o.b. East St. Louis. The demand for Cut Nails is slight, at $1.90 per keg, which price, it is reported, is shaded according to circumstances.

Chicago.

(*By Telegraph.*)

The wholesale houses here are winding up a most successful year, among the best, if not the best, they have ever known. In Heavy Hardware the volume of business was from 25 to 30 per cent. over that of '89, while in Shelf Hardware the increase has certainly been 25 per cent. In other respects the year's trade has also been very satisfactory. Without making special efforts to secure it, business has come to Chicago houses from a wider territory than ever before. The heavy stocks carried here, and the celerity with which large orders for special grades of goods can be filled, as well as the improved transportation service on railroad lines running out of Chicago, have attracted business in this direction from remote localities. This does not appear to be a temporary incident, but, on the contrary, bears indications of permanence. Active preparations are now being made for a larger business than ever, which is confidently anticipated by the merchants here, whose advices from the Northwest are of a most favorable character. Prices show no material change, but there is a prospect of some stiffening in Hardware, especially builders' goods.

Cleveland.

THE W. BINGHAM COMPANY.—Christmas has come and gone. This issue of your paper will be upon the dawning of a new year; 1890, with its joys and its sorrows, its successes and its failures, its hopes realized and unrealized, will have passed away, and with it have gone many of our friends, well known in the Hardware trade. As we enter upon the threshold of a new year we can look back upon the old with much satisfaction, not as a year of booms and big profits, but as a year of good, wholesome business, of comparative steadiness in prices, of very few failures and of fair profits. There have been some fluctuations in values, mostly of a downward tendency, confined principally to staples. We begin the new year with these goods upon a much lower plane—for example, the market as compared with a year ago is as follows, from stock:

	Last January.	Now.
Steel Nails	$2.50	$1.80
Wire Nails	3.10	2.20
Painted Barbed Wire	3.35	3.25
Galvanized Barbed Wire	3.95	3.80
No. 9 Plain Wire	2.95	2.25
No. 9 Galvanized Wire	3.55	2.80

Last season Green Wire Cloth sold at $1.70; for the coming season the best makes are $1.50, but for inferior makes these prices can be shaded. The majority of Shelf Hardware shows but little change—it is all low enough. All staples, taking the price of raw material into consideration, are lower than they ever have been, and with the opening of the spring trade should command higher prices. The squeeze in the money market was an unfortunate feature of the closing year, but now that confidence is being restored (the lack of it being, in our opinion, the sole cause of the late stringency) the money market is much easier and collections have been very fair. The outlook for another year of good, healthy business is excellent; and, closing, we wish our friends throughout the country a happy and prosperous new year.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The trade for 1890 being entirely over, a review or retrospect for the year may be of interest. As a rule, on January 1st inventories are not completed; or, if completed, are not footed and extended, but prudent business houses do not grope in the dark during the entire year for an analysis of the situation, but by a regular systematic examination of the sales, expenses, profits on sales, and losses from failures, they are able not only to guard against disastrous results, but to regulate their business accordingly. The volume of trade for the year has certainly exceeded that of either the two or three preceding years. The condition of the country generally has been that of universal employment and prosperity. Manufacturing and industrial pursuits have prospered, notwithstanding the fact that an occasional croaker may have aired his opinion to the contrary. Certainly, as a rule, the results of the year have shown that these opinions have either been from ignorance of the facts or else given from personal or political motives. It is true the margin of profits in either mercantile or manufacturing pursuits has not been large, but the day for large profits has passed for the present. Nothing short of almost a volcanic upheaval can change the existing conditions of the present business in this particular, but through intelligence and economical management of the above industries must the result be shown. The year of 1890 in our city shows the erection of some 12,000 new houses. Some of these have been of vast proportions; others of moderate size, but mostly constructed of a valuation suitable for the moderate income of the employees of this city, which is largely a manufacturing city. This being sufficient for an estimated increase of 50,000 in population. During the year there has been no necessity for idle corner or tavern loungers. Industries of all kinds have been carried on to the fullest point, with salaries correspondingly good. The croakers, who have for the last year been predicting ruin and distress, who have volunteered their opinions that the Christmas of 1890 would be the hardest Christmas this country has ever known, should have been in this city during the Christmas holidays, and witnessed the bustling and animation of our streets both day and evening. Men, women and children filled the streets and retail stores to such an extent that it made the sidewalks almost impassable, and pedestrians who were in any haste were compelled to take to the streets. Of one thing there can be no question: Never was there a time when, as a rule, the accountants or clerks in both retail and wholesale houses or manufacturing establishments were so well paid for their labor; neither had the mechanic or skilled laborer ever been so well paid as now. Never was there a time when a home could be furnished so cheaply as now. Never was there a time when each could live so comfortably on his income. Never was there a time when all kinds of goods could be bought so cheaply as has been the case for the past year. Never was there a time when the results of a day's labor would keep a family so comfortably. The only exception of price has been that of the farm products, but that coming direct to the pockets of the farmers has been greatly to their advantage, especially as goods purchased by farmers have been so low, that there should be no cause for complaint in that direction.

Therefore it is no wonder that every well-managed household had money to spend during the present Christmas holidays. The result of the panic did not affect that portion of the community; but it has been the speculator that came so nearly causing trouble throughout the country—those who invested in new projects or in uncertain securities. It was feared for a time that results might show themselves throughout the country in losses sustained by financial institutions, and is it not wonderful that we, as a country, who have the best banking system in the known world, whose national banks are regularly inspected by the Government, should find followers who patronize, with danger of loss, institutions who have no such restraint upon them as the national banks. It is very evident the people are not among those who had business experience during the severe panic of 1857, when the mercantile failures were caused by the failures of the then loosely managed State banks, when in many towns containing from 10,000 to 15,000 inhabitants scarcely a firm name that existed before the panic existed in the same manner when the panic was over. Salesmen, as a rule, are all off the road and at home during this season of the year, consequently trade is now principally confined to mail orders. The cold weather has caused a spasmodic call for Skates, Sleigh Bells, Ice Creepers, Snow Shovels, Sleds, &c. Collections thus far have been fair. Tight as the money market has been in the Atlantic Coast cities, the West and South have been freely supplied with funds for moving crops. This will always bring money, no matter how difficult it is to obtain for other purposes. Farmers are always sure of funds for their produce. No other branch is so fortunate in this respect. The unparalleled volume of trade during the last year will for the next two weeks be small in comparison, but we think the tendency of the market is generally toward a firmness in prices, and the stock of goods in the hands of the retail trade is not large. The amount of funds to be paid out by the Government immediately after January 1 will be large, and will reach a different class of people from those into whose hands the money went for the purchase of bonds during the early fall. The present disbursement by the Government will go into the hands of those who will immediately circulate it, and, therefore, reach the various channels of trade.

New Orleans.

A. Baldwin & Co.—With regard to the trade prospects in this section of the country we would state that there is nothing to complain of, and that our business has increased considerably over last year. Excepting in a money view just at this time, we are very well pleased with the prospects for the present and coming season. Leading staples are selling at such a low figure that, of course, the demand for articles of this class has increased in proportion. We certainly anticipate a very good trade for the coming months in this section.

Louisville.

W. B. Belknap & Co.—Business for the past fortnight on heavy goods has shown some falling off incident to the holiday season, when purchasers both in the country and in the city are confined more especially to light and fancy articles. The sales of these latter have been satisfactory to the trade at large. While there may have been some curtailments in the more expensive lines by reason of money conditions, the fact that the country is well off is evinced by the large number of small purchases, which show a handsome aggregate. It is folly to claim that the country is not in good circumstances, when everybody who is willing to work is employed, and that at profitable wages. There is no talk of labor trouble anywhere except possibly among the Pennsylvania miners. The wage workers themselves realize that they are fairly paid, and the employers show no disposition to make reductions.

The railroads are so crowded that the supply of Coal in this market from the Kentucky mines has been short throughout the whole fall and winter. There is a decided insufficiency of equipment manifest everywhere, and after an easier money market, we shall look to see round orders placed for next year. Moreover, the same conditions exist in regard to prices, to which we called attention some time since—namely, these are too close to cost on the great staples to make room for any panic or such further depreciation in value as to make present holdings insecure. Many of the leading articles are lower than ever known. With Cotton and Iron and their various products, at the prices now prevalent, they are about as good property to have as money in the bank. This, however, is a rather obsolete expression, and we say now, rather, "money in the trust company." Out West here the idea is that New Yorkers, who have the ability, have taken their money from the banks and locked it up in safety vaults, with the view of bringing about artificial scarcity. This, of course, leads up to a grand opportunity to scoop valuable securities on bear market, and take in the margins that others have lost. The call for exhibit of the national banks as of the 19th has demonstrated the fact that they are in much better position than most people supposed, and this information will add to the already returning confidence. In the opinion of our ablest financiers, by the 10th or 15th of January we shall see money abundant and a general recovery all along the line.

Omaha.

Lee-Clarke-Andreesen Hardware Company.—As the year draws to a close, nothing sensational develops to mark the prophecies of either optimists or pessimists. A remarkable holiday trade has been enjoyed in all lines of business. The colder weather prevailing has been of material assistance, lending considerable snap to general trade. It is to be expected that a season of comparative quiet in business circles will intervene between these busy holidays and the opening of the spring campaign. This is customary. The outlook for 1891 is regarded by merchants hereabouts as exceedingly promising, and hopes are indulged that nothing of a serious nature will arise to disturb what promises to be a banner year. Notwithstanding the continued financial tension at Eastern money centers, very little if any apprehension is felt in this direction. Enterprises already under way and projected are being pushed forward with steady and persistent perseverance. In this regard the condition of this entire Western country is one of healthfulness, progression and prosperity, and if not blighted or injured by a financial crisis, must necessarily continue to flourish and improve. Changes in values of Hardware are few and unimportant just now. Staple goods, such as Nails, Wire, &c., appear to have touched bottom, and we are inclined to think that it will be time to "call the turn" shortly.

San Francisco.

Huntington-Hopkins Company.—Of course it is to be expected that at this season of the year, when almost everybody is engaged in taking account of stock, trade falls off to a greater or less extent. We have, however, to report for this coast that owing to a decreased rainfall, compared with former years at this particular time of the year, sales have kept up, a fact which, compared with last year particularly, is, to say the least, encouraging. Collections from nearly all parts of the State have been good; the principal portion that we find that has been at all lax is the northern coast portion, where what little rain they do have interferes largely with getting out their product, which is composed principally of redwood lumber, ties, bark, &c., and furthermore, the market for those products at present is not a good one. The general tone, in summing the whole matter up, is healthy.

Baltimore.

Carlin & Fulton.—With the diversions of the holiday season and the disinclination of the trade to add much to their indebtedness at the close of the year, and also on account of the great snowstorm, which interferes decidedly with locomotion and business, we cannot say that just now trade is very active. There has hardly been a demand for goods during the present month sufficient to justify any belief in advances, and yet the fact that many lines of goods are down to manufacturers' cost, or close to it, can hardly suggest any further declines. From all indications there will be an excellent demand for goods just so soon as the country resumes its normal condition financially, and after the disbursements of January dividends, and the extension of time for the payment of duties on goods now in bond, we may soon expect a better state of things. Our Southern market, undoubtedly, has the largest cotton crop ever made, and while the price is extremely low, at the same time it is better than "no crop" and high prices.

Prices.

Barb Wire.—There is little to report, as the market is quiet, the local demand being sluggish. Prices are without change on the basis of 3.25 to 3.35 cents for Galvanized Four Point, New York, Painted being held at ½ cent a pound less.

Chicago, by Telegraph.—Jobbers report an increased trade, especially in mixed carloads, with Wire Nails. Quotations continue at $2.70 for carloads and $2.75 to $2.80 for small lots of Painted, and 60 cents per 100 pounds more for Galvanized.

The Barb Wire trade of 1890 was characterized by fewer attempts than usual to control the course of trade and establish a uniform price. Early in the year a meeting of manufacturers and jobbers was held at Chicago at which prices were advanced, but merely to meet temporary conditions. Subsequently the trade was left to deal as it would with the varying currents of supply and demand. Manufacturers again met in Chicago in December with the avowed object of effecting a close organization and advancing prices, but accomplished nothing. Prices on carload lots of Painted Barb Wire ranged about as follows during the year:

	Cents.		Cents.
January	3.25	July	2.85
February	3.35	August	2.85
March	3.30	September	2.85
April	3.15	October	2.85
May	2.90	November	2.75
June	2.85	December	2.70

Wire Nails.—The market does not show any improvement, but there has been no further yielding in price, the figures now being named being regarded as unprofitably low. Many of the large buyers have already placed orders, and business of good volume is being done in the way of carload orders from factory. The price is without change, $2.10 to $2.15 at mill for carload lots.

Chicago, by Telegraph.—The demand for Wire Nails is increasing. Almost every country merchant is laying in a carload or two while they are so cheap. Jobbers quote $2.35 for small lots, with 5 cents off for carloads. Manufacturers are quoting $2.20 to $2.25 for large lots.

Cut Nails.—The demand is rather sluggish. The buying, which was active a week or two ago, seems to have fallen off, and at the same time the makers are evidently not desirous of making contracts at the low figures which were quoted a short time ago. While quotations are unchanged on a basis of $1.80, f.o.b. New York, for Iron or Steel Nails, small lots from store being held at $1.85 to $1.90 for Iron, with the usual advance for Steel, the market is, as a whole, in a somewhat improved condition. It is thought by some that prices are on the turn, and in some cases an advance of 5 cents per keg is asked.

Chicago, by Telegraph.—Steel Nails are not so active as Wire Nails. In fact, it is estimated that Steel Nails now constitute but one-fourth of the Nails sold in this market. Jobbers have stocked up recently to some extent, but the Cut Nail trade is languid. They are quoted at $1.75, Chicago, in factory lots, and $1.85 in small lots.

Ice Creepers.—The following are the prices of the line of Ice Creepers manufactured by L. A. Sayre, Newark, N. J.:

Mackinaw	per dozen pairs.	$1.75
Surefoot	" "	1.50
Security	" "	1.25
Instep	" "	1.75
Jamestown	" "	5.50
Hudson River	" "	6.00

These different Creepers are illustrated in a circular issued by him.

Stanley Rule and Level Company.—A revised discount sheet is about to be sent out by the Stanley Rule and Level Company, New Britain, Conn., and 29 Chambers street, New York. It bears date January 1, 1891, and is to be attached to their price-list of January, 1888. In addition to the discounts given below an extra discount of 10 per cent. is made for cash in 30 days:

Catalogue pages.		Discount per cent.
57, Awl Hafts		50
57, Awls, Patent Pegging		50
47, Beader, Stanley's Universal		20
27, Bevels, Sliding T		60
27, "	Patent Flush Eureka	30
20, Bit and Square Level		20
53, Box Scraper, Adjustable		30
58, Brad Awls, Handled		30
48, Clapboard Marker		20
48, "	Gauge	20
58, Chalk Lines, Reels and Awls		30
57, Carpenters' Tool Handles		40
46, Chisel Gauge		20
53, Countersinks, Wheeler's Patent		40
42, Dado, Filletster, Plow, &c., combined		20
42, "	Adjustable	20
28 to 30, Gauges		60
31, Gauges, with improved Face Plate		60
58, Handles, Brad Awl		30
59, "	Plane	40
59, "	Saw	40
51, "	Screw Driver	50
62, Hammers, Magnetic		30
62, "	Tack, No. 4	30
63, "	Steak	30
62, "	Upholsterers'	30
41, Hollows and Rounds, for Plane No. 45		20
20, Level, Bit and Square		20
21, "	Glasses	70
16½, "	Sights	20
60&61, Mallets	Hickory	25
	Lignumvitæ	25
49, Miter Boxes		20
24, "	Squares	30
24, "	Try Squares	30
48½, Odd Jobs, Stanley's		20
18, Plumbs and Levels, Non-Adjustable		70
19, " "	Patent "	70
16½, " "	Duplex	70
20, " "	Nicholson's Patent	30
20, " "	Iron Frame	30
21, " "	Machinists'	30
21, Pocket Levels		70
32 to 34, Planes, Bailey's Adjustable, Iron		40
35, Planes, Bailey's Adjustable, Wood		40
36, " "	" Block	40
37, " Stanley	" Iron	40
38, " "	" Wood	40
39, " "	" Block	40
35 and 38, Plane Irons		40

Miscellaneous Planes.

44, Planes, Beading		20
40, "	Beading, Rabbet and Slitting	20
46, "	Chamfer	20
47, "	Floor	20
"	Nosing—a new attachment for Plane No. 45—Price $1	20
45, "	Rabbet	20
45, "	Rabbet and Filletster	20
46, "	Router	20
44, "	Tongueing and Grooving	20
54 and 55, Planes, Victor Adjustable		20
43, Plow Filletster, &c., combined		20
43, "	and Matching Plane, Bull Nose	20
50, Plumb Bobs, Adjustable		30
50½, Roofing Brackets		20
3 to 10, Rules, Boxwood, Stanley's		80
11, Rules, Ivory	"	50
14 and 15, Rules, Ivory, Stearn's		50
12 and 13, "	Miscellaneous, Stanley's	60
49, Sash Cord Irons		40
58, Scratch Awls Handled		30
51, Screw Drivers	No. 64, Var. Handles	65
	No. 75, Blk. "	60
51, " "	No. 86	70
52 and 53, Spoke Shaves, Bailey's		40
52, Spoke Shave Cutters, "		40
50, Trammel Points		30
49, " "	for Rules	20
56, Tool Handles and Tools, Excelsior		40
26, Try Squares, No. 20		60
22, "	Adjustable, No. 14	30
22, "	Iron Handle, No. 12	30
25, "	Inlaid, No. 10	30
26, "	Plumb and Level	30
25, Try Squares and Bevel, Combination		30
23, Try and Miter Square, Winterbottom's		30
34 and 37, Veneer Scrapers		40

Double Pointed Tacks, &c.—Cobb & Drew, Plymouth, Mass., under date December 1, issue the revised price-list printed below. It will be observed that the list on Double Pointed Tacks packed in dozens is that which is in general use, but there is no uniformity in the lists for Double Pointed Tacks in bulk. We are advised that their discount to small buyers is 85 and 10 per cent. on Double Pointed Tacks in papers, the rest of the list being subject to a discount of 75 and 10 per cent.:

Double Pointed Tacks.—Blued, Tinned or Coppered.

100 Tacks in a paper, or packed to order, 12 papers in a package, 12 packages in a case.

Nos	9	10	11	12	14	16
Price per doz.	$1.20	1.20	1.20	1.44	1.80	2.16

Double Pointed Tacks in Bulk.—Blued or Coppered.

Nos	9	10	11	12	14	16
Price per pound.	36¢	35	34	33	32	32
Tinned	42¢	41	40	39	38	38

Steel Spring Staples.—Made from Flat Coppered Wire.

Inside length	½	⅝	¾	⅞	1	1⅛	1¼
Price per pound.	34¢	32	30	30	30	30	30

Bed Spring Staples—Made from Round Coppered Wire. Barbed.

Inside length	½	⅝	¾	⅞	1
Price per pound.	34¢	32	32	30	30

Electricians' Staples—Blued or Coppered.—Made from Flat Wire. Round or Flat Crown.

Inside length	5-16	⅜	½	⅝	¾
Price per pound.	50¢	40	36	32	30
Tinned "	50¢	46	42	38	36

Clamp Staples.—Made from Heavy Coppered Wire.

When ordering, specify width inside first, as below.

3 x ⅜, 2½ x ¾, 2 x ⅝, 1¾ x ⅝, 1½ x ⅝, 1¼ x ⅝, ¾ x ⅝.

Price per pound, 28 cents.

Hoop Staples.—Made from Flat Coppered Wire.

When ordering, specify width inside first, as below:

⅝ x ½, ½ x ½, ½ x 9-16, 9-16 x 9-16

Price per pound, 30 cents.

½ x ⅝, 9-16 x ⅝, ⅝ x ⅝, ½ x ¾, ¾ x ¾

Price per pound, 28 cents.

Poultry Netting Staples.—Made from Galvanized Wire. Barbed.

Inside length	⅝,	¾,	⅞,	1,	1¼

Price per pound, 33⅓ cents.

Coppered Wire	⅝,	¾,	⅞,	1,	1¼

Price per pound, 30 cents.

Tube Staples, ⅜, 1, 1⅛, 1¼	$0.35
Broom " ⅜, ⅝, ¾, ⅞	.32
Pail " Coppered Wire, ¼ x ¼, ¼ x 5-16	.40
Pail Staples Copper, ¼ x ¼, ¼ x 5-16.	1.60
Light Clamp Staples, 1 x ⅝, 1 x ½, 1½ x ½	.30
Steel Clinch Staples, 1¼, 1½, 1¾, 2, 2¼.	.28
Rattan and Willow Staples	.50
Butter and Tobacco Tub Staples	.28
Straw Matting Tacks, best Steel	.50

Chain.—We are advised by Miller & Brewer, 83 Maiden lane, New York, that they are now prepared to furnish their Bessemer Steel Chain in the following sizes and at the following prices:

Inches.	Price.
7-16	9.80¢
⅜	9.35¢
9-16	9.05¢
½	8.75¢
11-16	8.65¢
¾	8.30¢
⅞	8 ¢
1	7.85¢
1⅛	7.75¢
1¼	7.75¢

At present they are not prepared to supply sizes smaller than $\frac{7}{16}$ inch. In regard to this Chain they advise us as follows:

After many experiments with metal of different properties, for the purpose of producing a fibrous and at the same time a hard compound, we believe we have been successful in solving the problem of making a Chain that will not only stand a high tension strain, but will prove most profitable to the consumer on account of its hardness and durability. Every pound of steel from which this Chain is made is tested to 67,000 pounds to the square inch, and we therefore test the Chain itself for the welds only. For this purpose it undergoes the same test as our B. B. B. Crane Chain.

Miscellaneous.—Alford & Berkele Company, 77 Chambers street, New York, have been appointed agents for Chambers' Patent *Gravity Sash Fastener*, manufactured by Moses Chambers, New Britain, Conn. This article is sold from the following list, which is subject to a discount of 60 per cent.:

	Per dozen.
No. 10, Enameled Iron	$1.00
No. 24, Plated Bronze	3.00
No. 38, Solid Bronze	5.00
No. 52, Solid Brass	4.50
No. 66, Nickel	5.50

Washita and Arkansas Stone.—We are advised that there is at present a scarcity of Washita and Arkansas rock, of which at the present time it is difficult to get a good quality in any considerable quantities. As a result, prices are higher, and are referred to as likely to still further advance.

Glass.—Quotations on American Glass from New York jobbers remain unchanged at 80 and 5 per cent. discount in lots of 10 to 15 boxes and 80 and 10 per cent. discount in car lots of not less than 400 boxes. French Glass is quoted at 75 and 10 per cent. discount, with an extra 5 per cent. when 50 boxes are ordered and taken in a calendar month. While the quoted price on Glass in small lots is 80 and 5 per cent. discount, there is no doubt that these figures are being shaded in some cases. It also appears that Glass in special lots from factories or brokers is offered to jobbers at 80, 10 and 10 per cent. discount, and in some cases as low as 85 per cent. discount. The result of the adjourned general meeting of the Glass manufacturers at Chicago, appointed for December 30 by the American Window Glass Company, is looked forward to with much interest by the Glass trade. If the Glass combination is effected the general impression is that prices will be advanced and wages of the Glass workers cut down. It is stated that the present cost of French Glass corresponds to 80 and 5 to 80 and 10 per cent. discount from the American list. Should the cost of common Glass exceed that of the foreign article, French Glass will be sold in preference to American. It is also understood that there is a stringency in the European money market and a consequent accumulation of stocks of Glass. Should this stringency continue or become more marked, there is a possibility that foreign makers will unload their Glass surplus in this country at a sacrifice, to obtain necessary funds for business demands. The advantage of such a course to foreign manufacturers would be that they could realize at once upon their bills of lading, and thus obtain relief without demoralizing prices in their home market. Such a state of affairs would enable American jobbers to sell foreign Glass at a less price than American. While it has been suggested that importers of French Glass be induced to join the American association, there is little prospect of this plan being consummated. The failure of the Executive Committee of the American Window Glass Company to meet on December 16 is looked upon as unfavorable to the successful formation of the Glass combination. Among reasons given by exceptionally well informed parties why the American Window Glass Company are not now in successful operation is that:

After numerous adjournments and assurances that the next meeting would settle everything and everybody, to again adjourn until December 30 naturally weakened confidence in the ultimate success of the scheme, the effect of which has been conclsively shown in the market of the past three weeks.

They also refer in the following terms to the fact that the project has not by any means been given up by those most interested in the matter:

However, it is quite possible that the American Window Glass Company may still get into operation by January 1 or very soon thereafter; in fact, assurance is received from very reliable sources that it positively will, in which event a steady, profitable market for all may reasonably be expected.

Latest advices state that the American Window Glass Company is an assured fact, and will commence active operations after the first of the year. It is stated that at the meeting held at Chicago on the 30th ult. all obstacles were removed, and with the assistance of ex-Governor Foster of Ohio the scheme was perfected.

Tariff Questions.

IN ANOTHER part of this issue our readers will find the full text of a tariff circular on the marking of imported goods. It will be observed that while it does not give a full explanation of the opinions of the Department in regard to all the questions which arise with reference to the marking of imported Hardware, it still indicates clearly the general principles by which the Department will be governed in its interpretation of the law.

In the matter of the protest of Henry Keidel against the rate of duty assessed by the collector of customs at Baltimore, Md., upon certain Double-Barreled Shot Guns, imported October 18, 1890, an opinion has been rendered by the general appraiser at New York under date December 4, in which it will be observed that it is decided that the duty on such goods should be assessed at 45 per cent. ad valorem. The decision is in the following terms:

The merchandise upon appeal consists of Double Barreled Muzzle Loading Shot Guns, claimed by the appellants to be dutiable at 25 per cent. ad valorem, in accordance with the provisions of section 5, act of October 1, 1890, by assimilation to Muskets, which are covered by paragraph 169; or, as further contended, if not subject to the rate of duty therein prescribed, should have been returned as manufactures of wood at 35 per cent. ad valorem, under paragraph 230, or as manufactures composed wholly or in part of iron, steel, &c., under paragraph 215, and not at $1.50 each and 35 per cent. ad valorem, the rate exacted upon the same under paragraph 170, by virtue of the similitude clause of section 5.

It will hardly be contended that Muzzle Loading Shot Guns with either single or double barrels are in fact Muskets. They are not so commercially known, and have been separately classified for duty under all former tariff legislation. The act approved June 22, 1874, provided for Muskets, Rifles and other firearms under one paragraph. Shot Guns for sporting purposes were included in the term "other firearms," and incidentally paid the same rate of duty as Muskets.

The act of 1883 again provided for Muskets, Rifles and other firearms under one heading, and added an additional paragraph covering Sporting Breech-Loading Shot Guns and Pistols of all kinds. Muzzle Loading Shot Guns continued, as heretofore under this act, to be classified as being included among firearms other than Muskets.

The act of 1890 enumerated specifically Muskets, Sporting Rifles, Breech-Loading Sporting Shot Guns and Revolving Pistols, but eliminated the words "other firearms." The omission, whether intentional or not, can have but one effect; all firearms not mentioned *eo nomine* must be esteemed as falling under some other paragraph of the act than that which provides for an especial kind of firearms. A mere resemblance in material, texture or purposes of use cannot change the result, provided there is any other paragraph in the act covering the material from which the article is manufactured. The several courts of the United States have at different times enunciated the principle that the similitude clause of section 2499 of the Revised Statutes, which is substantially reproduced in section 5 of the present act, was not intended to assess duties under, but was enacted merely to prevent evasion of the revenue laws, which had been or might be accomplished by importing into this country merchandise not enumerated or specially provided for in the tariff acts either as an article or material, but which was designed and intended to take the place of some article or material that was enumerated and subject to a higher rate of duty than that imposed upon non-enumerated articles. As heretofore ruled by this board, it is not necessary that an article must be provided for denominatively in order to be specially enumerated. It is sufficient if it belongs to a class of merchandise that is specified.

We do not deem it necessary to enter into a further argument upon this point, as we have heretofore done so at some length. The double barreled Shot Guns in question are manufactures composed of wood and metal, but inasmuch as wood does not constitute the component material of chief value, we shall not consider the claim of the importer that duty should be assessed upon them at 35 per cent. ad valorem. All of the requirements, however, of paragraph 215 have been complied with; the goods are manufactured wholly or in part of metal; they are consequently specially enumerated and provided for, and cannot be controlled by the similitude clause of section 5, which provides only for articles not enumerated or provided for.

The claim of the importer that duty should have been assessed upon the mer-

Prices.

Barb Wire.—There is little to report, as the market is quiet, the local demand being sluggish. Prices are without change on the basis of 3.25 to 3.35 cents for Galvanized Four Point, New York, Painted being held at ½ cent a pound less.

Chicago, by Telegraph.—Jobbers report an increased trade, especially in mixed carloads, with Wire Nails. Quotations continue at $2.70 for carloads and $2.75 to $2.80 for small lots of Painted, and 60 cents per 100 pounds more for Galvanized.

The Barb Wire trade of 1890 was characterized by fewer attempts than usual to control the course of trade and establish a uniform price. Early in the year a meeting of manufacturers and jobbers was held at Chicago at which prices were advanced, but merely to meet temporary conditions. Subsequently the trade was left to deal as it would with the varying currents of supply and demand. Manufacturers again met in Chicago in December with the avowed object of effecting a close organization and advancing prices, but accomplished nothing. Prices on carload lots of Painted Barb Wire ranged about as follows during the year:

	Cents.		Cents.
January	3.25	July	2.85
February	3.35	August	2.85
March	3.30	September	2.85
April	3.15	October	2.85
May	2.90	November	2.75
June	2.85	December	2.70

Wire Nails.—The market does not show any improvement, but there has been no further yielding in price, the figures now being named being regarded as unprofitably low. Many of the large buyers have already placed orders, and business of good volume is being done in the way of carload orders from factory. The price is without change, $2.10 to $2.15 at mill for carload lots.

Chicago, by Telegraph.—The demand for Wire Nails is increasing. Almost every country merchant is laying in a carload or two while they are so cheap. Jobbers quote $2.35 for small lots, with 5 cents off for carloads. Manufacturers are quoting $2.20 to $2.25 for large lots.

Cut Nails.—The demand is rather sluggish. The buying, which was active a week or two ago, seems to have fallen off, and at the same time the makers are evidently not desirous of making contracts at the low figures which were quoted a short time ago. While quotations are unchanged on a basis of $1.80, f.o.b. New York, for Iron or Steel Nails, small lots from store being held at $1.85 to $1.90 for Iron, with the usual advance for Steel, the market is, as a whole, in a somewhat improved condition. It is thought by some that prices are on the turn, and in some cases an advance of 5 cents per keg is asked.

Chicago, by Telegraph.—Steel Nails are not so active as Wire Nails. In fact, it is estimated that Steel Nails now constitute but one-fourth of the Nails sold in this market. Jobbers have stocked up recently to some extent, but the Cut Nail trade is languid. They are quoted at $1.75, Chicago, in factory lots, and $1.85 in small lots.

Ice Creepers.—The following are the prices of the line of Ice Creepers manufactured by L. A. Sayre, Newark, N. J.:

Mackinaw	per dozen pairs.		$1.75
Surefoot	"	"	1.50
Security	"	"	1.25
Instep	"	"	1.75
Jamestown	"	"	5.50
Hudson River	"	"	6.00

These different Creepers are illustrated in a circular issued by him.

Stanley Rule and Level Company.—A revised discount sheet is about to be sent out by the Stanley Rule and Level Company, New Britain, Conn., and 29 Chambers street, New York. It bears date January 1, 1891, and is to be attached to their price-list of January, 1888. In addition to the discounts given below an extra discount of 10 per cent. is made for cash in 30 days:

Catalogue pages.		Discount per cent.
57,	Awl Hafts	50
57,	Awls, Patent Pegging	50
47,	Beader, Stanley's Universal	20
27,	Bevels, Sliding T	60
27,	" Patent Flush Eureka	30
20,	Bit and Square Level	20
53,	Box Scraper, Adjustable	30
58,	Brad Awls, Handled	30
48,	Clapboard Marker	20
48,	" Gauge	20
58,	Chalk Lines, Reels and Awls	30
57,	Carpenters' Tool Handles	40
46,	Chisel Gauge	20
53,	Countersinks, Wheeler's Patent	40
42,	Dado, Filletster, Plow, &c., combined	20
42,	" Adjustable	20
28 to 30,	Gauges	60
31,	Gauges, with improved Face Plate	60
58,	Handles, Brad Awl	30
59,	" Plane	40
59,	" Saw	40
51,	" Screw Driver	50
62,	Hammers, Magnetic	30
62,	" Tack, No. 4	30
63,	" Steak	30
62,	" Upholsterers'	30
41,	Hollows and Rounds, for Plane No. 45	20
20,	Level, Bit and Square	20
21,	" Glasses	70
16½,	" Sights	20
60&61,	Mallets { Hickory / Lignumvitæ	25 / 25
49,	Miter Boxes	20
24,	" Squares	30
24,	" Try Squares	30
48½,	Odd Jobs, Stanley's	20
18,	Plumbs and Levels, Non-Adjustable	70
19,	" " Patent "	70
16½,	" " Duplex	70
20,	" " Nicholson's Patent	30
20,	" " Iron Frame	30
21,	" " Machinists'	30
21,	Pocket Levels	70
32 to 34,	Planes, Bailey's Adjustable, Iron	40
35,	Planes, Bailey's Adjustable, Wood	40
36,	" " " Block	40
37,	" Stanley " Iron	40
38,	" " " Wood	40
39,	" " " Block	40
35 and 38,	Plane Irons	40

Miscellaneous Planes.

44,	Planes, Beading	20
40,	" Beading, Rabbet and Slitting	20
46,	" Chamfer	20
47,	" Floor	20
	" Nosing—a new attachment for Plane No. 45—Price $1	20
45,	" Rabbet	20
45,	" Rabbet and Filletster	20
46,	" Router	20
44,	" Tongueing and Grooving	20
54 and 55,	Planes, Victor Adjustable	20
43,	Plow Filletster, &c., combined	20
43,	" and Matching Plane, Bull Nose	20
50,	Plumb Bobs, Adjustable	30
50½,	Roofing Brackets	20
3 to 10,	Rules, Boxwood, Stanley's	80
11,	Rules, Ivory "	50
14 and 15,	Rules, Ivory, Stearn's	50
12 and 13,	" Miscellaneous, Stanley's	60
49,	Sash Cord Irons	40
58,	Scratch Awls Handled	30
51,	Screw Drivers { No. 64, Var. Handles / No. 75, Blk. "	65 / 60
51,	" " No. 86	70
52 and 53,	Spoke Shaves, Bailey's	40
52,	Spoke Shave Cutters, "	40
50,	Trammel Points	30
49,	" " for Rules	20
56,	Tool Handles and Tools, Excelsior	40
26,	Try Squares, No. 20	60
22,	" Adjustable, No. 14	30
22,	" Iron Handle, No. 12	30
25,	" Inlaid, No. 10	30
26,	" Plumb and Level	30
25,	Try Squares and Bevel, Combination	30
23,	Try and Miter Square, Winterbottom's	30
34 and 37,	Veneer Scrapers	40

Double Pointed Tacks, &c.—Cobb & Drew, Plymouth, Mass., under date December 1, issue the revised price-list printed below. It will be observed that the list on Double Pointed Tacks packed in dozens is that which is in general use, but there is no uniformity in the lists for Double Pointed Tacks in bulk. We are advised that their discount to small buyers is 85 and 10 per cent. on Double Pointed Tacks in papers, the rest of the list being subject to a discount of 75 and 10 per cent.:

Double Pointed Tacks.—Blued, Tinned or Coppered.

100 Tacks in a paper, or packed to order, 12 papers in a package, 12 packages in a case.

Nos	9	10	11	12	14	16
Price per doz.	$1.20	1.20	1.20	1.44	1.80	2.16

Double Pointed Tacks in Bulk.—Blued or Coppered.

Nos	9	10	11	12	14	16
Price per pound.	36¢	35	34	33	32	32
Tinned	42¢	41	40	39	38	38

Steel Spring Staples.—Made from Flat Coppered Wire.

Inside length	½	⅝	¾	⅞	1	1⅛	1¼
Price per pound.	34¢	32	30	30	30	30	30

Bed Spring Staples—Made from Round Coppered Wire. Barbed.

Inside length	½	⅝	¾	⅞	1
Price per pound.	34¢	32	32	30	30

Electricians' Staples—Blued or Coppered.—Made from Flat Wire. Round or Flat Crown.

Inside length	5-16	⅜	½	⅝	¾
Price per pound.	50¢	40	36	32	30
Tinned "	50¢	46	42	38	36

Clamp Staples.—Made from Heavy Coppered Wire.

When ordering, specify width inside first, as below.

3 x ¾, 2½ x ¾, 2 x ⅝, 1¾ x ⅝, 1½ x ⅝, 1¼ x ⅝, ¾ x ⅝.

Price per pound, 28 cents.

Hoop Staples.—Made from Flat Coppered Wire.

When ordering, specify width inside first, as below:

⅜ x ½, ½ x ½, ½ x 9-16, 9-16 x 9-16
Price per pound, 30 cents.

½ x ⅝, 9-16 x ⅝, ⅝ x ⅝, ½ x ¾, ¾ x ¾
Price per pound, 28 cents.

Poultry Netting Staples.—Made from Galvanized Wire. Barbed.

Inside length	⅝,	¾,	⅞,	1,	1¼
	Price per pound, 33⅓ cents.				
Coppered Wire	⅝,	¾,	⅞,	1,	1¼
	Price per pound, 30 cents.				

Tube Staples, ⅞, 1, 1⅛, 1¼	$0.35
Broom " ½, ⅝, ¾, ⅞	.32
Pail " Coppered Wire, ¼ x ¼, ¼ x 5-16	.40
Pail Staples Copper, ¼ x ¼, ¼ x 5-16.	1.60
Light Clamp Staples, 1 x ⅝, 1 x ½, 1⅛ x ½	.30
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We do not deem it necessary to enter into a further argument upon this point, as we have heretofore done so at some length. The double barreled Shot Guns in question are manufactures composed of wood and metal, but inasmuch as wood does not constitute the component material of chief value, we shall not consider the claim of the importer that duty should be assessed upon them at 35 per cent. ad valorem. All of the requirements, however, of paragraph 215 have been complied with; the goods are manufactured wholly or in part of metal; they are consequently specially enumerated and provided for, and cannot be controlled by the similitude clause of section 5, which provides only for articles not enumerated or provided for.

The claim of the importer that duty should have been assessed upon the mer-

chandise at 45 per cent. ad valorem, under paragraph 215, is sustained, and you will reliquidate the entry accordingly.

Nails in 1890

WIRE NAILS continue to make steady inroads on Cut Nails throughout the year in the Chicago market. At times the Wire Nail factories were overrun with orders and were barely able to supply the demand. On the other hand, the manufacturers of Cut Nails have found themselves obliged to turn their attention to other lines of trade, and the number of establishments making Cut Nails a specialty has diminished. The Cut Nail business appears to be at present in a transition stage. A few large works with ample capital and special facilities will continue to make Cut Nails exclusively and will absorb the trade in that line which will be gradually abandoned by the others. There will always be a demand for Cut Nails, and it should be a remunerative business for those giving it their special attention. A new Cut Nail card was adopted in February, which introduced a reform by enabling buyers to order any quantity of any size. The Nail factory at Hammond, Ind., was started by Youngstown manufacturers in March, after a long idleness, and has been in successful operation from that time, making Cut Steel Nails. These Nails have now virtually determined the price at which other Cut Nails can be sold in Chicago. The Wire Nail trade of the year was largely influenced by the fluctuations in Wire Rods, which were at times quite scarce and dear. The following table shows the average monthly price of factory lots of Cut Steel and Wire Nails at Chicago during the year:

Months.	Cut Steel Nails.	Wire Nails.
January	$2.50	$2.90
February	2.40	2.95
March	2.30	2.75
April	2.10	2.40
May	1.85	2.30
June	1.95	2.40
July	2.00	2.40
August	2.00	2.50
September	1.95	2.55
October	1.95	2.40
November	1.85	2.30
December	1.75	2.25

Trade Items.

L. H. DRAKE, Burlington, Iowa, has disposed of his Hardware business, the Drake Hardware Company being the purchasers. The new company will begin operations January 1 with the following officers: Charles Otto, president; L. H. Drake, vice-president; Walter Schenck, secretary; S. H. Jones, treasurer. The company have an authorized capital of $100,000, one-half of which is paid up. The members of the new company are all experienced Hardwaremen, and it is expecten the business will be largely increased under their energetic management. Mr. Drake was impelled to take this step by reason of failing health and a desire to be relieved of the cares and anxieties of business. While retaining a small interest in the new concern, he will take no part in its active management.

Among the Special Notices in this issue will be observed one in which Smith Brothers, Delaware, Ohio, announce that having decided to locate in Columbus their Delaware business is for sale. This change of location is made with a view to extending their business, Columbus being chosen as an admirable central distributing point. Their retail trade in Delaware is referred to as large in volume and profitable. They will sell such amount of stock adapted for carrying on business as will suit the purchas r. This opportunity is certainly deserving of attention from those who contemplate purchasing an established Hardware business. They also suggest that parties having orders from them for spring delivery withhold shipment until notified.

In their advertisement this week Henry Seymour Cutlery Company, Holyoke, Mass., represent their calender for the coming year. It will be observed that it calls attention in an effective manner to the line of goods of which they are well known manufacturers, while at the same time it serves admirably as a calendar for store or office use.

Shuford Hardware Company, Hickory, N. C., issue a souvenir for 1891, in the form of an 1891 calendar; also a vest pocket memorandum book, with their advertisement on the front and back covers.

In their advertisement in this issue Baeder, Adamson & Co., 67 Beekman street, New York, and 730 Market street, Philadelphia, call attention to their well known line of Flint, Garnet and Emery Paper, Glue, Emery Cloth, &c., and also to other articles of their manufacture.

The Union Metallic Cartridge Company, Bridgeport, Conn., New York and San Francisco, issue a calender for 1891. It is 14 x 26 inches, with metallic ends, having a large illustration of a child hunter surrounded by dogs. It is finely executed in colors and presents an artistic appearance.

Nubian Iron Enamel Company, Chicago, state that for 1891, instead of the monthly which they sent out during '90, they will send a daily calendar in quarterly instalments. They state that they will gladly mail extra copies to any address.

In their advertisement in this issue the Troy Nickel Works, Troy, N. Y., call attention to their Alaska Stove Trimmings, Fire Sets, Pokers, &c., making special reference to the fact that they will not become hot and are light and convenient to handle and ornamental as well as useful.

The Cleveland Varnish Company, Cleveland, Ohio, are sending a card of phototype illustrations of their plant. The central picture is a bird's eye view of their works, surrounded by views of the different buildings and interiors of several rooms. The card is intended to hang, and presents an attractive appearance, its execution being very fine.

Cary Mfg. Company, 41 and 43 Centre street, New York, illustrate in their advertisement their Universal Metal Strap, which is a substitute for strap iron, wood straps, &c., for binding and packing cases. Illustrations are given showing the different widths made and the form of reel in which it is put up.

The Chicago Drop Forge and Foundry Company, Kensington, Ill., manufacturers of Solid Steel Drop Forged Shears, for the sale of which the S. A. Haines Company, 90 Chambers street, New York, are agents, advise us that they have been much behind their orders for the past six months, but having largely increased their facilities they are now able to promise prompt shipments for future orders. The former output of Shears was 200 dozen per week, but they are now turning out 125 dozen per day.

Chieftain Hay Rake Company, Canton, Ohio, advise us that James L. Neefus, who formerly represented them in New York City, having gone South, they will in future be represented by Franklin C White, 102 Chambers street, who will carry a full line of their Post Hole Diggers, Saw Sets, Can Openers, &c.

We are advised that Naylor & Flack, 121 Chambers street, New York, have been appointed New York agents for the Massachusetts Screw Company, Holyoke, Mass. They will carry in stock a complete line of Iron, Brass and Bronze Screws.

The Baker Wire Company, 645 Rookery Building, Chicago, have issued a very neat Christmas sonvenir. It is a well-executed engraving of the special Barb Wire train sent from Chicago to Texas on the 30th of August, loaded exclusively with the Baker Perfect Barb Wire.

F. E. Myers & Bro., Ashland, Ohio, advise us that they have in the printers' hands an order for 10,000 hangers similar to the one put out last year, with pad calendar and cuts engraved, which will be mailed to all dealers January 1 with their compliments. This Hanger will be much finer than heretofore, and is referred to as an effective advertisment as well as useful generally. They state that the demand for Double Metal Rail Track is exceedingly large, and that suits have been brought against infringers, as they propose to protect their rights and those of their customers on this class of goods.

S. L. Campbell, representing the Standard Fibre Ware Company of Mankato, Minn., in St. Louis and adjacent territory, has succeeded, we are advised, in working up a handsome business in his territory for their line of goods, with the prospect of a large increase in the coming season.

The Hazen Company of Cincinnati announce that they have purchased the entire business of the Cincinnati Wire Company. They have made arrangements to build a complete Wire mill and Wire Nail factory at Anderson, Ind., for the manufacture of the well known Arrow Steel Wire Nails. Pending the completion of their new factory they will operate the old works of the Cincinnati Wire Company in Cincinnati. The Hazen Company remove their general offices about January 1, 1891, to 59 West Fourth street, Cincinnati.

Robert M. Diaz Company, 292 Washington street, Boston, announce that about January 15, 1891, they will locate at 69 Pearl street, where, with commodious quarters, they will be prepared to carry on a first-class wholesale Cutlery and Fancy Hardware business. The removal makes it necessary for them to dispose of such samples and fixtures as cannot be used in the new store, which they offer at a sacrifice. They have also several lines of foreign Cutlery which they wish to close out, as they state the new tariff changes make it impossible for them to duplicate them at saleable prices. Ample facilities will be afforded those who call to make purchases, and communications of all kinds will receive prompt and courteous attention.

The trade will observe among the Special Notices one in which H. Parkman, 406 North Forty-first street, Philadelphia, announces his desire to make arrangements with manufacturers to represent them to the buyers of South America. Mr. Parkman's familiarity with the trade of that country is especially referred to.

Under date January 2 Henry B. Newhall Company, 105 Chambers street, New York, will issue a circular announcing their appointment as general agents for Stewart & Co. and Horace Lamb & Co. Stewart & Co. are referred to as among the oldest and most reliable Wire manufacturers of the country, and are prepared to furnish a full variety of market Wire both of steel and of charcoal iron, and Horace Lamb & Co. are well known manufacturers of Tinned Mattress and Broom Wire, also of Tinned Market Wire, the quality of which is especially referred to. With these arrangements the Henry B. Newhall Company allude to the fact that they are now prepared to serve their customers who may be in want of first-class Wire of any kind.

The attention of the trade is directed to the advertisement of the Erie Wringer Mfg. Company of Pittsburgh, Pa., which appears on page 68 of this issue. The firm are manufacturers of the Erie and King brand of Iron Frame Wringers, for which special claims as regards durability and construction are made. They also announce that they manufacture a full line of Wooden Frame Wringers.

I. L. Ellwood Mfg. Company, De Kalb, Ill., send, with compliments of the season, a note book containing slate finished leaves, with a slate pencil. This convenient little book is bound in imitation Russia leather, finished in gilt.

Foster, Stevens & Co., Grand Rapids, Mich., send two collections of views, one of celebrated cities of the United States, the other entitled "Around the World," containing views from various countries. In presenting the souvenirs, the above firm wish their customers a Merry Christmas and a Happy New Year.

Mason Regulator Company, Boston, Mass., send out an attractive card, headed "Christmas, 1890," in the upper left-hand corner of which is fastened a miniature envelope about 1 inch square, on which is printed the word "Token," containing a new 1890 1-cent coin. Under this, as a heading, is the following address to their customers:

At this season of gift making and general good feeling we want to contribute our share to the festivities, and beg your acceptance of this slight token. Not knowing your personal tastes and fearing duplicates of gifts, we send coin (legal tender) and urge you to spend it freely for whatever your inclination dictates, whether for art, literature or Tutti Frutti. Gratify your wants fully; let pleasure have her sway; but avoid foolish extravagance, remembering that "A penny saved is a penny got."

Wishing you a Merry Christmas and the Happiest of New Years, we are joyfully yours, &c.

The copartnership heretofore existing under the firm name of Smith, Lyon & Field, terminates December 31, by limitation, Judson A. Lyon withdrawing. The remaining partners, William T. Smith and R. C. Field, will continue the business at the same location—139 Duane street, and 62, 64 and 66 Thomas street, and under the same firm name. They retain, we are advised, all their old salesmen, among whom is Ferdinand Bonsal, who has been with the house for over 20 years, and have also engaged others, as their intention is to push the business vigorously. They hope to merit a continuance of the patronage so liberally given to them in the past.

Holiday Trade.

REPORTS from all parts of the country indicate the very satisfactory holiday business transacted, which, apart from other considerations, is gratifying as an indication of the prevailing prosperity of the country. It is evident that business generally has during the season been fully as profitable as usual. On this point the following advices from a well known house will be of interest as indicating the condition of things in Philadelphia during the holidays and describing scenes with which many of our readers in different parts of the country are familiar, the local setting only being changed:

For many days purchasing in the retail stores was made difficult from the immense crowd never before known in the existence of our city, and there never were so many goods sold for holiday presents as this year. Never before have the retail houses had such a satisfactory trade, and delivery wagons were dispatched with rigid instructions to make no delays, and deliveries were made far into the night. It was found impossible to deliver all the goods that were sold with the ordinary delivery system of the larger houses, consequently men, women and children carried packages and bundles and good-naturedly accepted the difficulty in getting along in the passing crowd. Street cars were overcrowded far into the night; many of the passengers overburdened with the day's purchases, and instead of seeing any results from the recent panic, we give the opinion of the largest sellers of goods that there never have been so many goods sold as this year. We give the opinion of hundreds of buyers that goods never were so cheap or so low in price, and it was a satisfaction to buy and thus make children and friends happy with such a small amount. A distinguished foreigner made the remark, "your country is not only wonderful, but one of apparent and wonderful prosperity, where every man and woman appears to have a full purse, and one cannot tell from appearance or buying capacity whether it be the employee or the employer." Nor was this rush confined to Chestnut, Market and Eighth streets, which are the retail streets in the heart of our city, but the extreme upper portions and western portions presented an equally animated and business like appearance.

Export Notes.

WE ARE GLAD to report that the prospects for a good export trade are favorable. The Australian trade has improved rapidly during the last month, notwithstanding the serious financial troubles occuring in England, which, of course, have affected the trade in that part of the world and retarded commercial operations considerably. Stocks in the interior, however, have been about exhausted, and large orders are now being placed for all classes of American goods suitable for that market. The upcountry buyers have been unable to get anything from distributing points for some time on account of the late strike, and jobbers in Melbourne and Sydney have been and are extremely busy.

The imports for the year up to November 15 amount to £14,359,424, as against £17,770,831 for 1889, a very large falling off, occasioned by the extremely bad times through which the Australian colonies have passed during the last year.

The Australian merchants are well pleased with the prompt delivery of shipments by the steamer Karlsruhe, loaded by Messrs. Mailler & Queareau and the combination of freighters in New York City. This steamer made the remarkable run of 43 days from New York to Adelaide, beating the Prodano some 60 days, which was the first steamer that sailed. The Prodano did not fare as well, either, as it was reported that she caught fire before reaching Australia, but we are without information as to what extent the cargo and ship are damaged.

The South African market is reported to be improving rapidly, and we learn of commission merchants about sending travelers out. There is a first-class trade to be obtained for American manufacturers, but the English have it all now, and will hold it as long as they can. The leading goods suitable for that market are cheap Plows, Hardware, Handles, Shovels, Patent Medicines, Cereals, &c. American novelties are particularly sought after in all English colonies, and it is a great pity that our manufacturers do not take more interest in foreign markets where they can obtain a good business, thus enabling them to run their shops at times of the year when home trade is dull.

The South American markets, especially in the Argentine Republic, are quiet. We learn of very few orders coming from Buenos Ayres, and there will not be any until matters are settled.

The new American ship St. Katherine, which sailed from this port a few days ago with a full cargo of American goods for Melbourne, has returned in a crippled condition, having lost her main mast and a large portion of her rigging. We have not yet learned whether her cargo has been damaged by water or not.

It is Reported—

That Daniel Miller has embarked in the Hardware business at Dana, Greene County, Iowa.

That the Hardware store of A. E. Brown, Agasta, Ohio, was recently destroyed by fire, the loss being $2500.

That J. P. Bodine, dealer in Hardware, Flemington, N. J., has taken his two sons into partnership.

That D. W. Johnson, Rich Hill, Mo., whose Hardware store was recently destroyed by fire, will rebuild at once.

That W. V. Cooley & Co., Stoves, Manchester, Ohio, have sold out to Holtz & Law.

That the firm of R. H. Huggett & Co., Hardware and Tobacco, Worthington, Ohio, have sold out to James F. Wright.

That G. B. Whitney has opened a new Hardware store at Burt, Iowa.

That Sprague & Boyden, manufacturers of Cutlery at Waterville, Conn., have sold out their business to Babcock & Jenks, who will take possession at once. The old firm consisted of David E. Sprague and Alonzo Boyden and had built up quite an industry, having employed about 60 hands.

That Geo. E. Coates, Stoves, South Deerfield, Mass., has sold out his business to L. B. Cobb.

That the firm of A. Hankey & Co., Camden, N. J., has been incorporated by Anthony Hankey and Francis P. Rogers, of Massachusetts, and Joseph X. Rogers, of Philadelphia. The capital stock is $100,000, and is understood to be fully paid in. The company will manufacture Machine Knives, &c.

That S. S. Morrow, Thayer, Ohio, has sold a half interest in his Hardware business to John Allison.

That the firm name of the wholesale and retail Hardware house of Stollberg & Clapp, Toledo, Ohio, has been changed to Stollberg-Clapp Hardware Company.

That August Rehbein, Hardware dealer, Duluth, Minn., has removed from his former location to 501 East Fourth street.

That C. E. Koontz, dealer in Agricultural Implements, Manhattan, Kan., has sold out his business.

That the fire on the 18 inst. in Charles Tanzer's Hardware establishment, Croghan, N.Y., completely destroyed the building, which was a wooden structure

about 30 x 90 feet and two stories high. Only the show cases and two stoves were saved from the fire. The flames extended to the residence of Mr. Tanzer adjoining the store, which was also burned to the ground, including nearly all of its contents. Another house belonging to Mr. Tanzer was somewhat damaged, as was also his barn. The fire is supposed to have originated from a stove in the workshop. Mr. Tanzer's loss is estimated at about $8000, on which the insurance is $6250.

That B. F. Crow will engage in the Hardware business at Syracuse, Ind.

That the Hardware store of Dutton & Maze, Tower Hill, Ill., was burglarized on the 17th inst., and a considerable quantity of Cutlery stolen.

That Hale's Hardware store at Decatur, Ind., has been burned out.

That Rapp & Fisher have purchased the Handware and Stove business of T. C. Carson & Son, Oxford, Iowa.

That W. G. Link's Hardware store at Oconto, Wis., was damaged by fire, the insurance on the stock being $2000.

That Blackner & Curran succeed A. C. Earsley, Hardware dealer, Herman, Minn.

That D. D. Miller Company, dealers in Hareware, Wooster, Ohio, have disposed of their business to Kinney & Cooley.

That William Berroth has purchased the business of Sellers & Faulds, Alma, Kan., dealers in Stoves and Hardware, and will continue the business in his own name at the old location.

That F. L. Wallace will open a Hardware store in Garfield, Wash.

That F. L. Tesca has succeeded Teska & Chermak, Hardware dealers, at Chatfield, Minn.

That Fred Rhodes will open a Hardware store at Fremont, Neb.

That Stephen Bunnell of the firm of Bunnell, Eggerston & Co., Provo City, Utah, has purchased the interest of S. P. Eggerston, Jr., and will continue the business with a complete line of Wagons, Agricultural Implements, Barb Wire, Hardware, &c.

That a new Hardware store will be opened in South Bend, Ind., under the auspices of O. E. Lang & Co.

That A. G. Lano, South Haven, Minn., has sold his Hardware and general store stock to Magoon & Gray, who will continue the business.

That Rushfeldt & Southwell have succeeded Hans Rushfeldt, dealer in Hardware, at Hawley, Minn.

That Genheimer & Reed, Pomeroy, Ohio, are a new Hardware firm.

That Daniel McLane has succeeded the firm of McLane & Crowe, dealers in Agricultural Implements, Litchfield, Minn., having purchased the interest of his late partner in the business, which will hereafter be conducted under the name of Daniel McLane.

That S. W. Mitchell & Son, Oxford, N. C., have sold out their business to Garrett & Dickinson.

That E. O. Johnson and G. B. Skinner have embarked in the Hardware business at Alamosa, Cal.

That the establishment of Thompson Brothers, Lenox, Iowa, was damaged by fire, the loss being $3500. The loss is a total one, no insurance having been carried. The stock consisted of Implements, Buggies, Wagons, Pumps and Windmills.

That the partnership which has existed between John M. Cress, Will S. Cress and S. E. Cress under the firm name of Cress Brothers, Sorento, Ill., has been dissolved, S. E. Cress having purchased the entire stock of Hardware, Stoves, Implements, &c. The business will be continued at the old stand by Mr. Cress.

That William Coverdill has opened a new Hardware store at Chester, Pa.

That Tomhoff's Hardware store in Guttenberg, N. J., was completely destroyed by fire on the 23d inst. The loss is estimated at about $5000.

That Clements & Monroe, dealers in Agricultural Implements at Waseca, Minn., have dissolved and been succeeded by Clements & Blackley.

That Barnes & Co., Amsterdam, N. Y., have sold their stock of Hardware, Stoves, &c., to Freidman & Co. of New York.

Price Lists, Circulars, &c.

STANDARD WIRE AND IRON WORKS, Chicago: Spring Supplement to their General Catalogue No. 47. Poultry Netting, Galvanized Wire Cloth, Floor, Counter and Bank Railings, Cast Iron Chairs, Vases, &c.

NORTH INDIANAPOLIS CRADLE WORKS, North Indianapolis, Ind.: Grass Snaths, Grain Cradles. Single and Double Trees. Cradles are made Turkey Wing, Morgan, Dutch Row, Ohio Premium, Half Grape Vine, Empire and Southern Pattern. Snaths are shown in Jersey, Mulay and Mohawk Patterns; also Patent and Two-Ring Bush Snaths.

SOUTHWARK SCALE COMPANY, Philadelphia, Pa.: Counter and Platform Scales, Scale Weights, Scale Scoops, Grocers' Tinware, Oil and Molasses Cans, Coffee and Sugar Bins, Show Canisters, Grocers', Candy and Tea Scoops, Bag Fillers, Bucket Measures and Safety Oil Tanks. Attention is directed to their I X L Steel Bearing Counter Scales with Combination Revolving Weight Holder and Twine Box.

P. P. MAST & CO., Springfield, Ohio: Buckeye Grain and Fertilizer Drills, Broadcast Seeders, Sunbeam Cultivators, Spring Tooth Cultivators, Hay Rakes, Cider Mills, &c.

SKANDIA PLOW COMPANY, Rockford, Ill.: Skandia Soft Steel Back String Plows, Sulky Plows, Wheel Walking Plows, Gang Plows, Breakers, Corn Planters, Check Rowers, Listers, Riding and Walking Cultivators, Harrows, Colters, Plow Repairs, &c.

THE F. A. NEIDER COMPANY, successors to Excelsior Handle Company, Augusta, Ky.: Carriage Trimmings, Buckle Loops, Curtain Patches, Curtain Lights, Carriage Knobs, Top Props, &c.

WILSON BROS., Easton Pa.: Grinding Mills for bone and shell; also Mills for grinding grain for family and stock use: Steam Engines, Boilers, Steam and Hot Water Heaters. It is stated these mills are intended to grind bones without any preparation, using them green or dry, with the exception of one mill, for which they should be dry.

THE NAIL CITY LANTERN COMPANY., Wheeling, W. Va.: Lanterns. They state that they have made such improvements in their Lanterns as experience has warranted or ingenuity devised, with regard both to convenience of operation, strength and durability of parts and symmetry of outline.

THE UPSON NUT COMPANY, Unionville, Conn., and Cleveland, Ohio, with branch houses at New York and Chicago: Nuts, Carriage, Plow, Machine and Whiffletree Bolts, Lag Screws, Axle Clips, Boxwood Rules, Sliding T Bevels, Coupon Cutters, &c.

TAYLOR & GALE, Chicopee Falls, Mass.: New Model Mudgett Tedder. This is referred to as being a great improvement over the old style, and will be thoroughly made and adjusted in all its parts. The point is made that it is of light draft, owing to high wheels and direct application of power to the work, no intermediate gears being used.

JOSEPH W. WAYNE, Cincinnati, Ohio: The Wayne Cork Filled Self-Ventilating American Refrigerators, in various styles of Ice Chests, Sideboards and Refrigerators. The advantages of using fine ground cork for filling are referred to as being that moisture is not absorbed or retained, and that being light and elastic it will not settle or pack down in the walls.

IRVING W. FOX, Rochester, Minn.: Sliding Table Saws, Horse Powers, Jacks, Engines, Boilers, Feed Mills, Tilting Table Saws; also general machine shop work, repairing Farm Machinery, Iron Pipe, Fittings, &c.

D. C. & H. C. REED & CO., Kalamazoo, Mich.: Eli Hay Rakes, Wood and Steel Frame Floating Spring Tooth Harrows, Cultivators and Broad Cast Seeders.

HENRY SEYMOUR CUTLERY COMPANY, Holyoke, Mass.: In connection with their 1891 calendar, an illustrated circular, pertaining to Seymour's Diamond Edge Sheep Shears Reference is made to the quality of the goods and the favorable prices at which they are offered.

F. A. TYLER, Rome, N. Y.: Tyler's Flour Receptacle and Sifter; also the Eclipse Vine and Plant Sprinkler. The Flour Receptacles are made to hold a sack of flour of 25 or 50 pounds and are hung to the wall. They are described as being made of heavy bright tin, handsomely decorated in assorted colors, and are very attractive.

C. & W. MCCLEAN, St. Louis, Mo.: Guns, Rifles, Revolvers, Sporting Goods, Loading Tools, Gun material, &c. A price current, devoted to season goods.

Exports.

PER BARK MARY HASBROUCK, DECEMBER 11, 1890, FOR BRISBANE, AUSTRALIA.

By The F. B. Wheeler Co.—6 gross Lead Pencils, 2 cases Agateware, 1½ dozen Coffee Pots, 1 gross Flour Sifters, 1 case Hardware, 3 dozen Tinware, 5 cases Hardware, 192 pounds Nails, 14 dozen Axes, 4½ dozen Hammers, 1 gross Rat Traps, 1 dozen Meat Choppers, 1 box and 5 cases Hardware.

By Arkell & Douglas.—7 dozen Forks, 6 dozen Wheelbarrows, 6 dozen Wrenches, 6 dozen Axes, 1 dozen Wringers, 8 dozen Choppers, 1 dozen Churns, 3 Cases Lawn Mowers, ½ dozen Pumps, 8 dozen Cow Bells.

By Mailler & Quereau.—22,407 pounds Barb Wire, 43 cases Tools, 2 barrels Cow Bells, 4 cases Meat Choppers, 1 case Sad Iron Handles, 2 cases Saws, 4 cases Stone, 2 cases Bolts, 2 Cases Forks and Rakes, 2 packages Nails and Tacks, 12 cases Lampware, 1 case Thermometers, 6 dozen Snaths, 6 cases Scales, 12 crates Stone, 4 cases Lampware, 8 packages Hardware.

PER BARK MYRTLE, DECEMBER 13, 1890, FOR PORT ELIZABETH, SOUTH AFRICA.

By Corner Bros. & Co.—1 Store Truck.

By W. H. Peabody & Co.—2 packages Pumps, 6 crates Corn Shellers, 2 cases Axles.

By John Norton's Son.—48 Rifles ½ dozen Clothes Wringers, 4 dozen Meat Choppers.

By Coombs, Crosby & Eddy.—21 Corn Shellers, 15,000 pounds Barb Wire, 2 dozen Scales, 3 dozen Scoops, 1 dozen Churns, 4 Store Trucks, 23 dozen Plow Points. 7 Stoves, 1 case Stove Fixtures, 31 dozen Hardware, 3 Road Scrapers, 1 case Roller Skates.

By W. H. Crossman & Bro.—1 Hay Cutter, 17 packages Agricultural Implements, 2 cases Hardware, 10 dozen Spades, 1 case Agricultural Implements, 1 case Hardware, 4 cases Agricultural Implements, 30 Scales, 1 case Hardware, 7 cases Agricultural Implements, 1 case Hardware, 5 racks Churns, 4 dozen Sash Cord, 1900 pounds Sash Weights.

By Arkell & Douglas.—28 packages Windmills, 2 Scales, 91 dozen Locks, 2 dozen Axes, 1400 pounds Nails, 1 case Pulleys, 5 Shellers, 6½ dozen Choppers, 51½ dozen Wrenches, 36 dozen Padlocks, 39 dozen Rakes, 2 dozen Ladders, 12 dozen Can Openers, 1 case Tools and Primers, 3 dozen Hammers, 10 Shellers, 16 Scales, 12 Barrows, 22 pounds Cordage, 28 dozen Axes, 6 Stoves, 6 dozen Lamp Goods, 23 cases Hardware.

The Kupferle No. 35 Compression Hydrant.

John C. Kupferle, St. Louis, Mo., is introducing a hydrant, as illustrated in Fig. 1. The construction of this hydrant is given

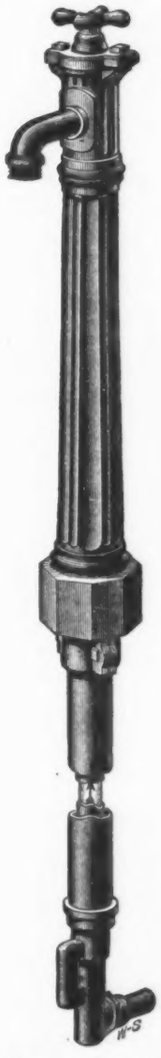


Fig. 1.—The Kupferle No. 35 Compression Hydrant.

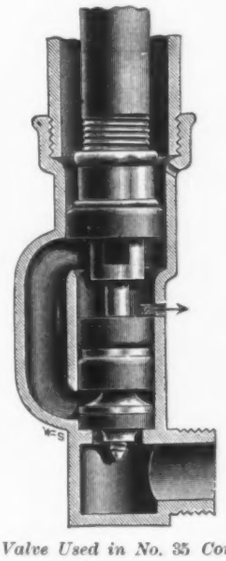


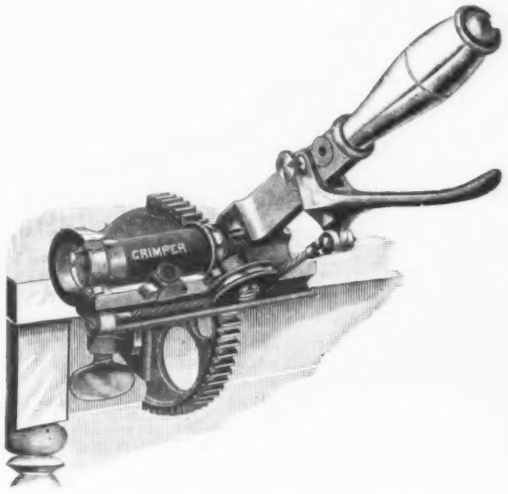
Fig. 2.—Valve Used in No. 35 Compression Hydrant.

as follows: All are furnished with sand cup; painted cast iron stock; nozzle and all working parts of brass; outer pipe, which acts as a frost case, is 1¼ inch for ¾ hydrant; closes against pressure; no packing in the top, and made for either lead or iron pipe. Fig. 2 shows the working parts of the valve used with this hydrant. The seat at the bottom of the valve is referred to as being lowered so that when the plunger is raised ⅛ inch the waste holes are closed by the cup washers, and the opening through the seat is wholly closed, thereby preventing waste of water when the hydrant is partly open. The point is made that when the plunger is raised ⅛ inch water passes up through the side of the valve body, and into the inner pipe of the hydrant and direct through the nozzle. This is alluded to as an improvement, doing away entirely with washers or packing in the top parts and preventing water coming in contact with the top operating mechanism. The statement is made, as a result of this principle the outer pipe acts as a frost case, which makes this hydrant anti-freezing. The area of water way through valve seat and inner pipe is described as exactly equal to the area of outlet, thereby giving a steady and uniform supply. To repair this valve the direction is given to take off the top bolts of the hydrant, unscrew the nozzle, and the inside pipe and plunger can be pulled out without unscrewing any valve parts. These valves are guaranteed by the manufacturers to leave the factory perfect, and to give entire satisfaction in any kind of climate, water or soil.

Brooklyn will have built next spring at Prospect Park a new water tower and stand pipe, to cost $100,000. It will be made of Connecticut sandstone.

Hunter's Hand Lever Cartridge Crimper.

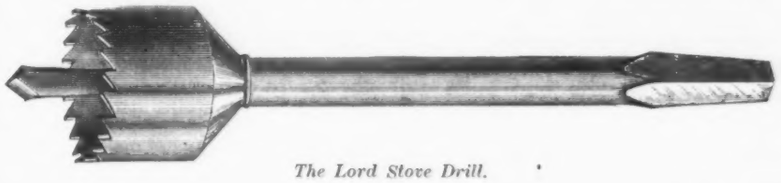
The Paragon Novelty Company, New Haven, Conn., are introducing a cartridge crimper, as illustrated herewith. It is stated that one full movement of the lever, either up or down, will crimp a shell perfectly. It is claimed that this lever crimper is open to none of the objections of crimpers, having the closer wheel turned by a crank.



Hunter's Hand Lever Cartridge Crimper.

The Lord Stove Drill.

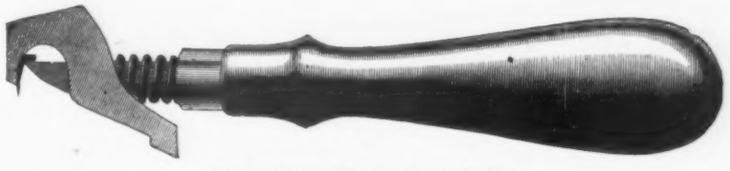
L. L. Lord, Meadville, Pa., is manufacturing a drill for drilling stoves for natural gas, water back connections, &c., as illustrated herewith. The projecting drill is intended to center the hole and keep the teeth in place while drilling. It is described as made of the finest tool steel, the teeth being very finely tempered.



The Lord Stove Drill.

Reid's Little Wonder Tack Puller.

Hagen & Reid, Troy, N. Y., are introducing a tack puller, as illustrated herewith. The steel point is thrust under the head of the tack, and the tack pulled by pushing the handle down, to the position shown in the cut. The manufacturers claim that no tacks stick in the claw, and claws do not stick in the carpet; that it will pull any size or kind of tack, even a double pointed one, or a pin; that tacks may be pulled very rapidly, and are pulled perfectly straight; that they are easily pulled, and that few heads are sacrificed in the pulling.



Reid's Little Wonder Tack Puller.

The Monarch Clevis.

The Monarch Clevis Company, Madison, Wis., are introducing a clevis, as illustrated herewith. Fig. 1, represents the pin, held in place by the latch, while Fig. 2 shows the manner of removing the

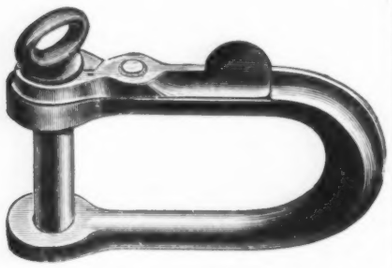


Fig. 1.—The Pin in Place Ready for Use.

pin. The latch is actuated by a spring, the pin having a depression immediately under the head, into which the jaw of the latch fits. The manufacturers claim that the pin cannot get out or lose out; that it can be used as a center as well as an end clevis; that the pin can be removed whenever desired and cannot rust fast; that the latch does not freeze tight,

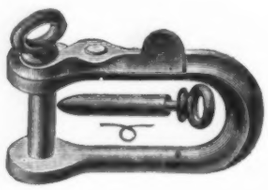
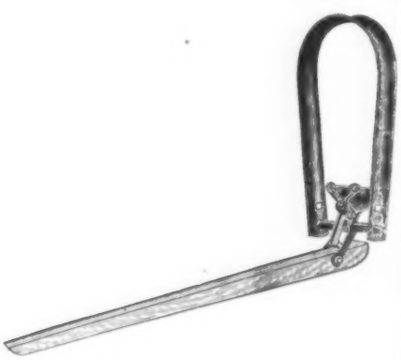


Fig. 2.—The Manner of Removing the Pin.

and that the spring will not rust. It is stated that strength and weight are prominent features in its construction. Three sizes of these clevises are made, the inside measurements being given as No. 1, 2 x 2¾ inches; No. 2, 2 x 3½ inches, and No. 3, 2¼ x 4¼ inches.

Krick's Metallic Horse Poke.

The Theo. J. Ely Mfg. Company, Conneautville, Pa., are manufacturing a metallic horse poke, sillustrated here with. The



Krick's Metallic Adjustable Poke.

bow is described as being made of very smooth rolled tempered spring steel, heavily concaved, which, it is stated, cannot spring out of shape or go to pieces when exposed to the action of the weather, and does not wear the mane. The bow is adjustable to fit a small, medium or large neck, by means of three sets of holes in which the arms of the center piece can be placed and fastened by a spring key. The center is described as being of the best quality malleable iron. The wooden brail is coupled to the center piece by means of an ordinary bolt, allowing, it is stated, a broken one to be replaced by boring a hole in a stick and inserting the bolt. The point is made that the relation of the brail to the poke is such that the brail remains in front when feeding, not coming in contact with the legs, and that when the animal's head is up the end of the brail is the first to come in contact with an obstruction. The claims are made by the manufacturers that these pokes are light, neat and compact, and that they will withstand four times the strain that ordinary wooden pokes will.

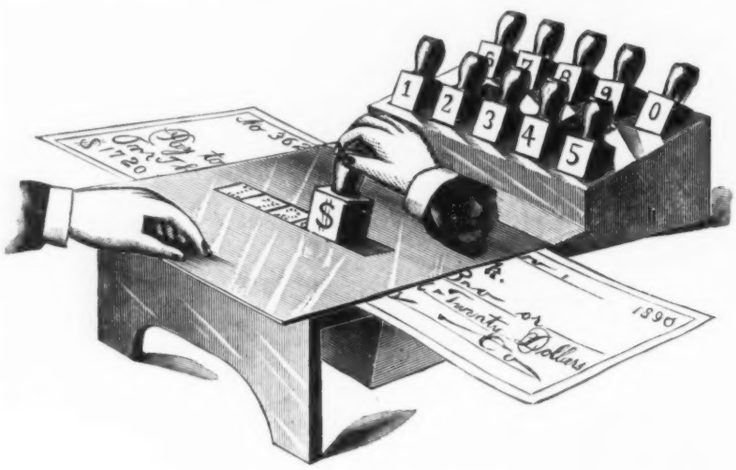
The Star Chopping Knife.

C. T. Ludwig, Bucyrus, Ohio, is introducing a chopping knife, as illustrated herewith. The blades are described as hand forged tool steel, the handle hardwood, and the shank of polished malleable iron. The statement is made that the blades will carry an edge equal to the best butcher knife, and that they can easily be taken apart for sharpening by simply withdrawing two bolts. The Star chopping knife is designed to chop mince meat, salad, clams, codfish, &c.; in fact for any use to which the ordinary mincing knife is put. The idea of the knife is that the material chopped shall work up through and drop out at the sides, the thinness of the blades and the distance between each having this end in view. The knife is made in a substantial manner and presents an attractive appearance.

The Star Chopping Knife.

New Check Protector.

The device illustrated in the accompanying cut is known as the Perfect Check Protector, and is being introduced by the Perfect Check Protector Company, corner of Ninth and Olive streets, St. Louis, Mo. Special features, to which the manufacturers direct attention, include the thoroughness with which work is done by it and the remarkably low price at which it is supplied. The cost is from one-fifth to one-sixth of the figure that has been asked for other and competing devices. The using of this protector makes the raising of a check impossible, for not only does it perforate the check, but at the same time it inks the perforation, showing in illuminated figures the amount for which the check is drawn. The device is not automatic, but nevertheless checks can be perforated with great rapidity and accuracy. It has the advantage of being simply and strongly made, and has nothing about it to get out of order. The body is of cast iron and the plates are of brass, nickel plated. The figures are made of steel



The "Perfect" Check Protector.

points set in an alloy of lead and antimony. The manner of using the perforator is clearly shown in the engraving. The check is slipped face up between the plates; the left hand is then placed on the side of the top plate, as show in the engraving, so as to hold the check securely in position. Then the several figures and characters

are taken up with the right hand and the pins pressed through the check into the inking pad below. After the work is done a blotter may be passed over the check after removing it from the machine, thus taking up any surplus ink that the perforations may carry. This is particularly desirable immediately after the pad has been re-inked. Re-inking is a very simple matter and the device is so arranged that it can be taken apart for cleaning whenever that is necessary. Those who have used this device speak in enthusiastic terms concerning it.

The Famous Self-Heating Plumbers' Torch.

The Famous Mfg. Co., St. Louis, Mo., are putting upon the market a self-heating plumber's torch, as illustrated herewith. It is described as being made of heavy cast brass throughout, well put together without brazed or soldered joints. The manufacturers state that no air pumps are used, that it will not leak, and that repairs are unnecessary. The small amount of fuel required to operate the torch and

The Famous Self-Heating Plumbers' Torch.

the satisfactory work resulting from its use, also the intensely hot flame produced, are points to which special attention is directed. It is referred to as being compact in shape, allowing it to be held in any position, making it an excellent tool for heating heavy pipe while making a joint and for thawing frozen pipes. The oil tank on every torch, it is stated, is subjected to a test of 250 pounds per square inch hydraulic pressure, before leaving the factory.

The Surprise Calf Weaner.

F. D. Kees, Beatrice, Neb., is introducing a calf weaner, as illustrated herewith. It is made of heavy galvanized wire, bent in shape to pass over the head of the calf, the ends of the wire forming sharpened prongs over the nose of the animal. A concave is firmly attached to the prongs to stiffen them and to keep them from bending. Below the neck of the calf the wire is formed into a snap, to keep the weaner rigidly in position when once placed. This device was originated by a practical farmer, and used several seasons before an attempt was made to put it on the market. It was intended for use on the prairies of the West, and its popularity at home proves that it has met all expectations. The sales of this weaner in Nebraska alone have amounted to some hundred dozens since its introduction, and its use has extended to other States, although but recently introduced to the trade. It is claimed that it will not loosen or come off; that it will not cause sore nose, or smother the animal; that it will not hinder the calf from eating or drinking, and that it will entirely prevent the

The Surprise Calf Weaner.

animal from sucking. The maker guarantees the weaner to do all that is claimed for it. Five sizes of the weaners are made, of which numbers 1, 2 and 3 are of No. 7 wire, and numbers 4 and 5 of No. 6 wire.

The Otsego Eureka Fork No. 99.

Otsego Fork Mills Company, Girard, Pa., are offering to the trade the Eureka Fork, as illustrated herewith, having a solid steel guard over the head. These forks are especially adapted to handling potatoes and other small vegetables, ear corn, coal, coke, etc. It is stated that the

The No. 99 Eureka Fork.

construction of the fork enables the operator to take at one time as much or even more than can be handled with a scoop.

The T. M. C. Dauber.

Thompson Mfg. Company, Lansingburg, N. Y., are putting upon the market an improved shoe dauber, as illustrated herewith. It is described as being made of a solid knot of extra stiff bristles, with a nickel plated hollow sheet metal tilting handle and sheet metal scraper. The handle is strengthened at the neck by having a shank cast on one side of the ferrule, and extending about 1 inch inside of the handle. The advantage of the tilting handle is referred to as setting the brush at a much more convenient angle than a straight handle does, also as lessening the possibility of striking the operator's knuckles on the shoe. The mud scraper is set obliquely to allow any part of the shoe being reached with it. The knot of bristles is alluded to as being just the right size to enter the common blacking box and to black the shoe without daubing the upper, making, the manufacturers put it, a dauber that will not daub. These brushes are guaranteed by the makers not to come to pieces.

The "T. M. C." Dauber.

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CURRENT HARDWARE PRICES.

DECEMBER 31, 1890.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Adjusters, Blind.

Domestic.....₩ doz $3.00, 33⅓&5%
Excelsior.....₩ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20&20&10%

Ammunition.–

Caps, Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges—

Rim Fire Cartridges.....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting.....15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.....65&2%

Shells Loaded—

Standard List, July 19, 1890..40&5@40&10%

Wads—Price per M.

U.M.C.&W.R.A.—B.E., 11 up... 68¢
U.M.C.&W.R.A.—B.E., 9&10... 82¢
U.M.C.&W.R.A.—B.E., 8..... 96¢
U.M.C.&W.R.A.—B.E., 7.....$1.10
U.M.C.&W.R.A.—P.E., 11 up.. 1.15
U.M.C.&W.R.A.—P.E., 9&10.. 1.50
U.M.C.&W.R.A.—P.E., 8..... 1.70
U.M.C.&W.R.A.—P.E., 7..... 1.80
Dis. 20&2
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20..... 2.80

Anvils.–

Eagle Anvils, ₩ ℔ 10¢.....15@15&5%
Peter Wright's .....11½@12¢
Armitage's Mouse Hole.....10½@11¢
Armitage's Mouse Hole, Extra...12@12½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $3.00.....40&10%
Star.....45&5%

Apple Parers—See Parers. Apple, &c.

Augers and Bits—

Douglass Mfg. Co.....
Wm. A. Ives & Co.....
Humphreysville Mfg. Co.....
French, Swift & Co. (F. H. Beecher,.. P. S. & W. Co.....
Rockford Bit Company.....
Cook's, Douglass Mfg. Co.....
Cook's, N. H. Copper Co. 50&10&50&10&5%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits .....60&60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....60@60&10%
Car Bits, P. S. & W. Co.....60&10%
Snell's Car Bits.....60%
L Hommodieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits....30&10%

70&10%

Bit Stock Drills—

Morse Twist Drills .....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30&30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood.. .40&10%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clarks' small, $18; large, $26 ₩ .35@35&5%
Ives' No. 4, ₩ doz $60.....40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $22.....35%
Searns' No. 2, $48.....20%

Gimlet Bits—

Common ..... ₩ gross $2.75@$3.25
Diamond..... ₩ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co ...30&10%
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass' .....40&10%
Double Cut, Ives'..... .....60@60&10%

Hollow Augers—

Ives .....
French, Swift & Co..... } 33⅓ @ 33⅓&10%
Douglass'.....
Bonney's Adjustable, ₩ doz $48....40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's .....25@25&10%
Cincinnati Adjustable..... .....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's .....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—

Awls, Sewing, Common ₩ gr $1.70, 35%
Awls, Should. Peg, ₩ gr $2.45, 40@40&10%
Awls, Pat. Peg...₩ gr 63¢ .... 40@40&10%
Awls, Shouldered Brad..2.70 ₩ gr.....35%
Awls, Handled Brad...$7.50 ₩ gr.....45%
Awls, Handled Scratch ₩ gr, $7.50.35&10%
Awls, Socket Scratch, ₩ doz, $1.50.25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality	$8.00	$8.50
Others.....	7.50	8.00

Axle Grease—See Grease, Axle.

Axles—

No. 1, 1¼@5¢, No. 2 5½¢@6¼¢ } 3% cash
Nos. 7 to 14.....55&5%
Nos. 15 to 18.....47½&
Nos. 19 to 22.....70%
Concord Axles, loose collar.....5¢@6¢
Concord Axles, solid collar.....6¢@7¢
National Tubular Self-Oiling..... 33⅓%@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

Spring Balances	No. 2000	20	30	40%
Chatillon, ₩ doz.....	$0.80	0.95	1.75	net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Bars.

Crow—

Cast Steel.....₩ ℔ 4½¢
Iron, Steel Points..... ..₩ ℔ 3¾¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82...50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's..... ....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.50
Duplex (Standard Co.).....₩ doz $1.25
Rival (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz $3.50
Bryant's.....₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral (H. & R. Mfg. Co.).....₩ gro $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro $9.00
Paine, Diehl & Co.'s.....₩ gro $24.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....₩ ℔ 3¢@3¼¢
Steel Alloy Church and School Bells..40%

Door—

Gong, Abbe's .....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's..... .....10%
Crank, Connel's.....30&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned .....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's..... .....50&10&2%
Pull, Western..... .....25&10%

Electric,

Wollensak's..... ....20%
Bigelow & Dowse.....20%
Taylor's 20%

Hand—

Light Brass.....75&10%
Extra Heavy.....65&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent) .....25&10@35%

Bellows—

Blacksmiths' ....60&5@65%
Molders' ....40@40&10%
Hand Bellows..... .....40&10@50%

Belting, Rubber—

Common Standard .....70@70&5%
Standard..... ...60&10&10@70%
Extra.....50&10@60%
N.Y.B.&P.Co., Carbon...50&5@50&10&5%
N.Y.B.&P.Co., Diamond....40&5@40&10%

Bench Stops—See Stops, Bench.

Benders, Upsetters, Tire.

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Ordinary Tackle, list May 20, 1889... 60&10&10@70%
Cleveland Block Co., Mal. Iron..... ...50%
Moore's Novelty, Mal. Iron.....50%

Boards, Stove.

Wood Lined "Crystal".....50%
" Embossed".....50%
" Oxidized".....45%
Paper Lined Zinc.....55%
" Crystal".....55%
" Embossed".....55%
" Oxidized".....45%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....70&10&5&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890..... 75&10@75&10&5%

Door and Shutter—

Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....55&10%
Wr't Sunk Flush, Stanley's list....50&10%
Wr't B.K.Flush. Com'n " ....55&10%

Stove and Plow—

Stove..... .....60%
Plow.....60&5%
R. B. & W., Plow.....50%

Tire—

Common, list Feb. 28, '83 .....65%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83..... .....65%
Keystone, Philadel., list Oct. '84....80%
Norway, Phila., list Oct. '84 .....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84..... .....80%
Bay State, list Feb. 28, '83..... .....65%
R.B.&W., Philadel., list Oct. 16, '84.....80%

Borers, Tap.

Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10&30%
Clark's.....33⅓&35%

Borax.....₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.

Per ℔.....2¾¢

Braces.–

American Bit Brace Co.:
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5%
Ball Braces, net .....$1.12 to $1.25¢
Amidon's
Barker's Imp'd Plain..... 75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet..... .....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's
Nos. 10 to 16..... 50%
Nos. 30 to 33..... 50%
Nos. 40 to 63..... .....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball..... net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers..... .....60&5%
Spofford.....60&5@60&10%
Osgood's Ratchet.....40&10@50%
P. S. & W. Co., Peck's Patent..... ....60%

Brackets—

Shelf plain, Sargent list, 55&10&5& 10&10%
Shelf, fancy, Sargent s list, 60&10@60 &10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette .....60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11 / Per doz ..$4.50 5.50 6.50
New Haven..... .. 50%

Buckets, Well.

Galvanized—

Hill's.....₩ dos, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz. 14 qt, $4.25@$4.50
Helwig's Flat Iron Band... .....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—

Brass—

Wrought Brass.....75&10@80%
Cast Brass, Tiebout's'.....50%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned....
Loose Pin, Acorns, Japanned, Plated Tips.....
..70&10@7%

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c ....
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
.70&10@75%
Bronzed Wrought Butts. 50

Calipers—See Compasses.

Calks, Toe—

Gautier..... ..₩ ℔ 5½@6¢
Dewicks (Burke).....₩ ℔ 5½@6¢

Can Openers—See Openers, Can.

Cards—

Horse & Curry.....10&10&10&10%
Cotton.....10&10&10%
Wool.....10&10&10%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sw Carpet.

Cartridges—See Ammunition.

Casters—

Bed..... ..... } Brass....55@55&10%
Plate..... } Others...60@60&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem. .....60@60&5%
Martin's Patent (Phœnix)....45&10&50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—See Leaders, Cattle.

Chain—

Trace, Wagon and Fancy Chains, List revised April 21, 1890.....50&10@60%
American Coil, in cask lots,
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
$7.75 5.45 4.55 4.00 3.65 3.50 3.40 3.30
Less than cask lots, add ½¢@1½¢ ₩ ℔.
German Coil, list Oct. 6, 1890 50&10&5@60%
German Halter Chain, list Oct. 6, 1890 50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Covert Heel Chain .....50&2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....75&10@80%
Jack Chain, Brass.....75@75&10%

Chalk—

White.....₩ gr 50¢
Red.....₩ gr 70¢
Blue.....₩ gr 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—

Socket Framing and Firmer.

P. S. & W.....
New Haven.....
Witherby.....
Mix.....
..75 @ 75&10
Ohio Tool Co.....
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers.....40&10&10%
Socket Firmers.....15@15%
Gouges, Sweet's, ₩ ℔ 80¢
Buck Bros.....80¢
Spear & Jackson's.....75 to 90¢
Butchers'.....$1.75@2.00
Gouges.....40&10&10%

Chucks—

Beach Pat.....each, $8.00.....20%
Morse's Adjustable,each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Churns.

Tiffin Union No. 1, 5 gallon...$3.25 each
Tiffin Union No. 2, 7 gallon...$3.75 each
Tiffin Union No. 3, 10 gallon...$4.25 each

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.
Bradley's.....25@30%
L. & L. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....55%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee.

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list..40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.
Common.....₩ ℔ 10@11¢
Patent, good quality.....₩ ℔ 13@13½¢
White Cotton Braided, fair...₩ ℔ 28@29¢
Common Russia Sash.....₩ ℔ 13½¢
Patent " " .....₩ ℔ 15¢
Cable Laid Italian Sash.....₩ ℔ 22@23¢
Indian Cable Laid " ... .₩ ℔ 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....28@30%
B Quality, Drab, 55¢.....31@33%
C Quality, White (only).....26@27¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢...30@30&5%
Braided, Drab Cotton, 55¢....30@30&5%
Braided, Italian Hemp, 55¢...30@30&5%
Braided, Linen, 80¢.....30@30&5%
Wire Picture.
Braided or Twisted.....75@75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gr, 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins, Curtain.

Cutters—

Meat.
Dixon's ₩ doz.....40&5%
Nos.... 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's ₩ doz.....40&5%
Nos.....100 150
$15.00 $18.00
Hales Pattern ₩ doz.....70@70&5%
Nos.....11 12 13
$27.00 $33.00 $45.00
American.....30%
Nos..... 1 2 3 4 5
Each.....$5 $7 $10 $25 $50 $90
Enterprise.....30%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Great American Meat Cutter.....30%
Nos..... 112 116 118 120 122
Each.....$2.00 $2.75 $3.00 $2.50 $4.00
Miles' Challenge ₩ doz.....45@45&10%
Nos.....1 2 3
$22.00 $30.00 $40.00
Home No. 1.....₩ doz, $26.00, 55&10%
Draw Cut, each:
Nos..5 2 6 8
$50 $75 $80 $225 .....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant.....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00
Tobacco.
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%
Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Cutlery—

Pocket and Table.....Net prices
Wostenholm.. ..New list in preparation

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.. ....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Brcs.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60. ....66⅔&10&10%
P. S. & W.....70%
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50& 5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Elirich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw-Driver Bits..... .. ₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets, No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits ....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery. — No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
½ kegs, ₩ ℔	4¾¢	5½¢	2¾¢
¼ kegs, ₩ ℔	5 ¢	5¾¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6¼¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.
List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Fasteners, Blind—

Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....35%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key..50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Imported—
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 60%

Fixtures.

Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List.65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame.
Warner's Screen Corner Irons...33⅓&10%
Stearns' Frames and Corners..25@25&10%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&2 5
Shepard's Lightning.....65@65&2 5
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless and Giant.....60&10%
Zero and Pet.....65&10%
Boss.....65&10&10%
Keystone, P. D. & Co., each, $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Fuse— ₩ 1000 ft

Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....75&10&5@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co 10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
The Le Page Co.'s Improved Process 25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs..₩ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.... ..₩ ton $7.50@9.00

Grindstone Fixtures—See Fixtures, Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short..$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00...45&10%
Pat. Peg, Leather Top. ₩ gr $12.00.45&10%

Halters.

Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp .....50&2%
Covert's Adj. Rope Halters .....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%
Covert's Adj. Web Halters .....35&2 %

Hammers—

Handled Hammers—
Maydole's, list Dec. 1, '85.. ....25&10@35%
Buffalo Hammer Co.
Humason & Beckley
Atha Tool Co. } 50@50&10%
Fayette R. Plumb.
C. Hammond & Son.
Verree.
Hartford, Nail Hammers...35&10@40&5%
Hartford, Machinists, &c .....50@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox 40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 ℔ and under.. .... ₩ ℔ 40¢ }
3 to 5 ℔.....₩ ℔ 36¢ } 70@70&10%
Over 5 ℔.....₩ ℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods,

Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 13¢; No. 6, 16¢; No. 2 and No. Reversible, 18¢.
Cross-Cut Saw Handles—
Boynton's Loop Saw Handles, 50¢....60%
Champion.....15%
Iron, Wrought or Cast—
Door or Thumb.

Nos.....	0	1	°	°
Per doz....	$0.90	1.00	1.13	1.35 1.50

60&10&10

Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88..... net
Barn Door, ₱ doz $1.40..... 10&10%
Chest and Lifting..... 70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd.₱ gr 4.50
Hickory Firmer Chisel, large..₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd...₱ gr 3.00
Socket Framing Chisel, ass'd.₱ gr 5.00
J. S. Smith & Co.'s Pat File..... 50%
File, assorted..... ₱ gr 2 75 } 40@
Auger, assorted.....₱ gr 5.00 } 40&10%
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'..... .....30&10%
Pat. Auger, Douglass..... ₱ set $1.25
Pat. Auger, Swan's..... .....₱ set $1.00
Hoe, Rake, Shovel, &c. ....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track 65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling's Imp'ved (Anti-Friction).65&10%
Victor, No. 1, $15.00; No. 2, $16.50, No. 3, $18.00..... .....50&2%
Cheritree.....50&10%
Kidder's..... .....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₱ ft. 10¢..... .50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₱ set $6.00..... .....20%
Eclipse..... .....20&10%
Felix, ₱ set $4.50..... .....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10@10%
Stearns' Anti-Friction.20&10@20&10@10%
Stearns' Challenge.....25&10@25&10@10%
Faultless..... .....40@40&5%
American, ₱ set $6.00..... .....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢..... .....40%
Paragon, Nos. 1, 2 and 3 .....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron..... .....50%
Nickel, Malleable Iron and Steel.....50%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00..... .....45%
Star .....40&10@40&10&5%
May .....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic..... .....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's..... } 40 & 10
Underhill's..... }
Buffalo Hammer Co..... } @
Fayette R. Plumb..... } 50&5 %
C. Hammond & Son... ... }
Kelly's..... }
Sargent & Co..... }
P., S. & W. Co..... }
Ten Eyck Edge Tool Co..... ....
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour .....70&2%
Huffer 50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10@22½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50. .....10%

Gate Hinges—

Western..... .....₱ doz $4.40, 60%
N. E.....₱ doz $7.00, 55%
N. E. Reversible.....₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₱ doz $5.00, 55&10%
Automatic .....₱ doz $12.50, 50%
Common Sense.. ...₱ doz pair $4.50, 50%
Seymour's..... .....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%

Spring Hinges—

Union Spring and Blank Butts.....40%
Bear's Spring Hinge Co.'s list, March 1886 ... .20%

Acme..... .....30%
J. S. .....25&10%
Empire and Crown.....20%
Hero and Monarch 55%
American, Gem, and Star.....20%
Oxford..... .....20%
Barker's Double Acting..... ... 25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'..... .....10%
Devore's..... .....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Niagara, Holdback pattern, per gross, ...$14.00

Wrought Iron Hinges

Strap and T.....75&10%
Screw Hook and Strap. { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Heavy Welded Hook. { 6 to 12 in., ₱ ℔ .4 2-10¢ / 14 to 20 in., ₱ ℔ .3 7-10¢ / 22 to 36 in., ₱ ℔ .3 2-10¢
Screw Hook and Eye { ½ in., ₱ doz $1.50 / ⅝ in., ₱ doz $2.45 / ¾ in., ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₱ ℔.....5¢ / "Providence" { over 12 in., ₱ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat.
Am. Axe and Tool Co., S. & O. Pat. } 50&10&5 @60%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub..... .....60&10%

Handled—

Garden, Mortar, &c..... 65&5@65&10%
Planter's, Cotton &c.....65&5@65&10%
Warren Hoe.....60%
Magic ... .₱ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₱ doz $18.....60%

Bit.

Extension, Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal.....₱ doz $24.00, 40%
Angular.....₱ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₱ doz $4.00; 25%
Nicholson File Holders..... 20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list..... } 60&10&10%
Bird Cage, Reading..... }
Clothes Line, Sargent's list.. }
Clothes Line, Reading list. 60@10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading..50&10@50&10&10%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886..... .....50%
Wire Coat and Hat, Miles', list April, 1886..... .....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt. .....80@80&10%
Atlas, Coat and Hat.....60%

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₱ doz $2.25
Bush..... .....65@60%
Whiffletree—Patent..... .....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American..... .....50%
Bench Hooks .....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra..... .....50&10@60%
N. Y. B. & P. Co., Para..... .....25&5%
N. Y. B. & P. Co., Extra..... ..10@10&5%
N. Y. B. & P. Co., Dundee... 60&10 @ 60%

Huskers—

Blair's Adjustable..... ..₱ gr $8.00
Blair's Adjustable Clipper. ..₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory ...₱ 100 ℔, $2.30@$2.40
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'....₱ doz $18.00 net
Mrs. Pott's Irons..... . . ..50&5%
Enterprise Star Irons.. .. ..50&5%
Cold Handle Sad Irons..... .....50&5%

Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons..... .....25%
B. B. Sad Irons, ₱ ℔.....3 @3¼¢
Combined Fluter and Sad Iron, ₱ doz, $15.00.....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England..... .....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible..... .....20@20&5%
National Self-Heating..... .....30%

Soldering—

Soldering Coppers..... ₱ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy..... .....33⅓%
Victor..... .....33⅓%

Kettles— Spun. Stamped.
Brass, 7 to 17 in., ₱ ℔.... 24¢ 22 ¢
Brass larger than 17 in., ₱ ℔..... 26¢ 24½¢
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c..... .....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₱ doz $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, 1st Oct. 1, 1890 .....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c..... ...40%
Nichols' Butcher Knives.....40&10%
Ames' Shoe Knives..... .....20@25%
Ames' Bread Knives..₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's..... .....10%
Wadsworth's..... .....25%

Drawing—

Witherby..... } .75@ 75&10 %
P. S. & W ..... }
Mix ..... }
New Haven..... }
Merrill .....60&10@60&10&5%
Douglas..... .....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding..... .....25@25&5%

Hay and Straw—

Lightning..Mfrs', price ₱ doz $18.00, 25% But jobbers cut this price freely, often selling at $8 @ $8.50.
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₱ doz $11.00@$11.50
Heath's.....₱ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay .....₱ doz.$7.00 @ $8.00

Mincing.

Am. (3d quality), ₱ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's, ...20&10%
Smith's, ₱ doz, Single, $2.00: Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₱ doz $3.00 .25%
Buffalo Double Adj'table.₱ doz $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain .....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles.— Melting, Sargent's.....55&10%
Melting, Reading .....35&10%
Melting, Monroe's Pat...₱ doz $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₱ doz.....$4.00@4.25
Lift Wire, with Guards.....$4.50@4.75
Square Plain, with Guards....$4.00@4.25
Sq. Lift Wire, with Guards...$4.25@4.50
Without Guards, 25¢ ₱ doz less.

Miscellaneous.

Police, Small, $6.00; Medium, $7.25; Large, $9.75..... .....20@25%

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's..... .....60%&10%
Hotchkiss..... .....30%
Peck, Stow & W. Co..... ..60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's :
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass..... .....35%
Skylight Lifters 35%
Crown, Eagle and Shield..... .....50%
Reiher's, list Sept. 1, 1890.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%

Excelsior..... .....50&10&2%
Shaw's..... .....50&10%
Payson's:
Universal..... .....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's Chalk..... .....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro..... .....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton..... .....45%
Wire Clothes.. Nos. 12 10 20 100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50, 20%

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan.1,'85..33⅓&2%
Deitz, Nos. 36 to 39..... .....40%
Deitz, Nos. 51 to 63..... .....40&10%
Deitz, Nos. 86 to 96..... .....30%
Stoddard Lock Co..... .....30&33⅓%
"Champion" Night Latches..... .....40%
Barnes Mfg. Co..... .....40@40&10%
Eagle and Corbin Trunk..... .....25&2%
"Champion" Cab. and Combin...33⅓%
Yale..... .....net prices
Romer's..... .....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar.20, 1889..... } 65&10@70 Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., list Aug. 1, '88 }
Reading Hardware Co., list Feb. 2, '88..... }
Brittan, Graham & Mathes, list Jan. 1890..... .....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate..... .....33⅓&2%
Barnes Mfg. Co..... .....40@40&10%
Yale..... .....net prices
Deitz Flat Key..... .....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches..... .....15%
Shepardson or U. S..... .....35%
Seed's N. Y. Hasp Lock..... .....25%

Padlocks—

List Dec. 23, '84. ....75&10%
Brittan, Graham & Mathes.....75&10%
Yale Lock Mfg. Co.'s.....net prices
Eagle..... .....25&2%
Eureka, Eagle Lock Co..... .....40&2%
Romer's, Nos. 0 to 91..... .....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz..... .....40%
Champon Padlocks..... .....40%
Hotchkiss..... .....30%
Star..... .....45%
Horseshoe.....₱ doz, $9, 40@40&10%
Barnes Mfg. Co..... .....40@40&10%
Nock's..... .....30%
Brown's Pat..... .....25%
Scandinavian..... .....90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140... ..90&10% Other Nos..... .....65%
Ames Sword Co. up to No. 150..... .....40%
Ames Sword Co. above No. 150..... .....50%
Slaymaker Barry & Co.
No. 41 line..... .....45&5%
No. 31 line ....60&5%
No. 21 line..... .....75@5%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₱ gr.. .33⅓%
Ferguson's..... .....33⅓%
Morris and Triumph, list Aug. 16, 1886. 60&2%
Victor..... .....60&10&2%
Walker's..... .....10%
Attwell Mfg. Co..... .....25&33⅓%
Reading..... .....66⅔&10@66⅔&10&10%
Hammond's Window Springs..... .....40%
Common Sense, Jap'd, Cop'd and Br'zed ....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal..... .....80%
Kempshall's Gravity..... .....60%
Kempshall's Model..... .....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect..... .....60@60&10%
Hugunin's Sash Balances..... .....25&5&2%
Hugunin's New Sash Locks..... .....25&5&2%
Stoddard "Practical"..... .....10%
Ives' Patent..... .....60&10@60&10&5%
Llesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00..... .....20&10%
Davis, Bronze, Barnes Mfg. Co..... .....50%
Champion Safety, list March 1, 1888 55@55&5%
Security..... .....70%
Buckeye..... .....₱ gro $4.80

Lumber Tools—See Tools, Lumber

Lustro—

Four-ounce Bottles....₱ doz, $1.75; ₱ gross..... .....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas.....		$5.50	$6.75 .....50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%
Jennings	5.50	6.75	45@45&10%
Other Machines...	2.35	2.75	.....
Phillips' Patent with Augers ...	7.00	7.50	.....

Fluting.

Knox, 4½-inch Rolls .....$3.25 each } 35%
Knox, 6-inch Rolls..... $3.60 each }
Eagle, 3¼-inch Roll, $2.15..... .....35%
Eagle, 5½-inch Roll, $2.85..... .....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in ....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... .....35%
Domestic Fluter ....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00..... .....30%
Shepard Hand Fluter, No. 85 ₱ doz 15 30.. ....40%

Shepard Hand Fluter, No. 110 ₱ doz $11.00 ..... 40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00 ..... 40%
Clark's Hand Fluter. ₱ doz $15.00 ..... 35%
Combined Fluter and Sad Iron, ₱ doz $15.00 ..... 30%
Buffalo ..... ₱ doz $10.00 ..... 10%

Hoisting—
Moore's Hand Hoist, with Lock Brake 20%
Moore's Differential Pulley Block 40%
Energy Mfg. Co's 25%

Washing—
Anthony Wayne, ₱ doz No. 1, $51; No. 2, $45; No. 3, $42

Mallets.
Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. ..... 30@30&10%

Mattocks. Regular list ..... 60&10%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Mills.

Coffee—
Box and Side, List Jan. 1, 1888 ..... 60&2%
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros ..... 20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.
Leading makers ..... 60@60&10&5%
Other makers ..... 60&10&5@60&10&10%
Pennsylvania 60%
Continental 60%
New Model ..... 60&10&5%
New Quaker City ..... 60&10&5%
Great American ..... 60&10&5%

Muzzles—
Safety ..... ₱ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Penny.
Association list, July 15, '89 ..... 75&10%
Tack Mfrs.' list 70%
Wire Nails, Standard Penny.
Card June 1, '89, base ..... $2.35 @ $2.45

Horse—See Trade Report.

Nos.	6	7	8	9	10
Ausable	.28¢	26¢	25¢	24¢	23¢.
					40&5&2%
Clinton, Fin.	.19¢	17¢	16¢	15¢	14¢
Essex	.28¢	26¢	25¢	24¢	23¢.
					25&10@25&10&10%
Lyra	.19¢	17¢	16¢	15¢	14¢
Snowden	19¢	17¢	16¢	15¢	14¢
Putnam	.23¢	21¢	20¢	19¢	18¢.
					1000 ℔ in year 15%
Vulcan	.23¢	21¢	20¢	19¢	18¢.
Northwest'n.	25¢	23¢	22¢	21¢	20¢.
					25@25&5%
Globe	.23¢	21¢	20¢	19¢	18¢.
Boston	.23¢	21¢	20¢	19¢	18¢.
					20&5&5&2½%
A. C	.25¢	23¢	22¢	21¢	21¢.
					25&10@33⅓&5%
C. B.-K	.25¢	23¢	22¢	21¢	20¢.
					25&10@33⅓&5%
Maud S	.25¢	23¢	22¢	21¢	21¢.
					40&10&5&2%
Champlain	.28¢	6¢	25¢	24¢	23¢.
					25&10&10%
New Haven	.28	26¢	25¢	24¢	23¢.
					25&10&10&10%
Saranac	.23¢	21¢	20¢	19¢	18¢...30&10%
Champion	.25¢	23¢	22¢	21¢	20¢.
					10&10&10%
Capewell	.28¢	26¢	5¢	24¢	23¢.
					35&5&35&10%
Star	.23¢	21¢	19¢	18¢.
					10&10&10&12½%
Anchor	.23¢	21¢	20¢	19¢	18¢ 35%
Western	.23¢	21¢	20¢	19¢	18¢...40&10%
Empire Bronzed					.14 ₱ ℔.

Picture—
Brass Head, Sargent's list ..... 50&10&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—
Nuts, off list Dec. 18, 1889: Square, Hex.

	Hot Pressed	Cold Punched
5.10¢	5.70¢	
4.80¢	4.90¢	

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—
Government ..... ₱ ℔ 7@7¼¢
U. S. Navy ..... ₱ ℔ @6¼¢
Navy ..... ₱ ℔ 5¼¢@5½¢

Oilers—
Zinc and Tin ..... 65&10@70%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams 50%

Openers, Can.
Messenger's Comet ..... ₱ doz $3.00, 25%
American ..... ₱ gross $3.00
Duplex ..... doz 25¢, 15&20%
Lyman's ..... ₱ doz $3.75, 20%
No. 4 French ..... ₱ doz $2.25, 55&60%
No. 5, Iron Handle ..... ₱ gr $6.00, 45&50%
Eureka ..... ₱ doz $2.50, 10%
Sardine Scissors ..... ₱ doz $2.75@3.0.
Star ..... ₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50 50&10&10% $2.50; No. 2, $1.50 ... 40%
World's Best, ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ₱ doz $3.00 ..... 55%
Domestic, ₱ doz $2.50 ..... 45%
Champion ₱ doz $2.00 ..... 60%

Packing, Steam—

Rubber—
Standard ..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard. 40&10@50%
N. Y. B. & P. Co., Empire ..... 60&5@65%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 10@15%
Jenkins' Standard. ₱ ℔ 80¢, .25@25&5%

Miscellaneous—
American Packing ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute ..... 7¢@8¢ ₱ ℔

Padlocks– See Locks.

Pails.

Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75	
Heiwig's	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets, see Well Buckets.

Indurated Fibre Ware—25%
Star Pails, 12 qt ..... ₱ doz $6.00
Fire, Stable and Milk, 14 qt .. ₱ doz $7.80

Standard Fibre Ware—

	Plain.	Deer'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pans.

Dripping.
Small sizes ..... ₱ ℔ 6¼¢
Large sizes ..... ₱ ℔ 5½¢
Silver & Co. (Covered) 40%

Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 70&10%
Acme Fry Pans ..... 60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886 ..... 50@50&10%
Sibley's Emery and Crocus Cloth 30%

Parers.

Apple.

Advance	₱ doz	$4.75
Baldwin	₱ doz	5.25
Bonanza	each	5.00
Champion	₱ doz	7.25
Daisy	₱ doz	4.00
Dandy	each	7.50
Eureka, 1888	each	16.00
Family Bay State	₱ doz	12.00
Favorite	₱ doz	5.00
Gem	₱ doz	5.25
Gold Medal	₱ doz	4.00
Ideal	₱ doz	4.00
Improved Bay State	₱ doz	27.00 @ 30.00
Little Star	₱ doz	4.50
Monarch	₱ doz	13.50
New Lightning	₱ doz	5.50
Oriole	₱ doz	4.00
Penn	₱ doz	4.00
Perfection	₱ doz	4.00
Pomona	₱ doz	4.00
Rocking Table	₱ doz	6.00
Turntable	₱ doz	4.50
Victor	₱ doz	13.50
Waverly	₱ doz	4.00
White Mountain	₱ doz	4.00
72	₱ doz	4.25
76	₱ doz	5.75
78	₱ doz.	6.50

Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' ..... 40&10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.

Bow—
Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co's ....$17 and $18 ..... 60&10%
Peck, Stow & W Co ... 50&10&50&10&5%

Curtain—
Silvered Glass ..... net
White Enamel ..... net

Escutcheon,
Iron, list Nov. 11, 1885 ..50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain 47½%
1¼ and under, Galvanized 40%
1½ and over, Plain 50%
1½ and over, Galvanized 47½%
Boiler Tubes, Iron.
1¾ and under 45%
2-inch and larger 50%

Planes and Plane Irons—

Wood Planes—
Molding ..... 30&2%
Bench, First Quality ..... 45&2%
Bench, Second Quality ..... 50&2%
Bailey's (Stanley R. & L. Co.). .. 40&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.) ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.) ..... 20&10@20&10&10%
Steer's Iron Planes ..... 35@35&10%
Merrien Mal. Iron Co.'s ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co ..... 50@50&10%
Gage Tool Co.'s Self-Setting ..... 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co ..... 50@50&5%

Plane Irons—
Butcher's ..... $5.00@$5.25 to £
Buck Bros 30%
Auburn "Thistle" ..... 35&2%
Ohio ..... 35&2%
Sandusky ..... 35&2%
S. & I. J. White 25%

Plates.
Felloe ..... ₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33⅓%
Humason & Beckley Mfg. Co. .50@50&10%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. .60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₱ doz, $12.00 .. 30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's 50%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis' Inclinometers ..... 10&10%

Poachers.

Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00 ..... 25%
Silver & Co., 6-Ring, ₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L ..... ₱ doz $6.00
Bishop's O. K ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Eagle, Double Stale ..... ₱ doz $5.75
Eagle, Single Stale ..... ₱ doz $3.75
Buckeye, Single Stale ..... ₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish, Metal.
Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Polish, Stove.
Joseph Dixon's ..... ₱ gro $6.00, 10%
Gem ..... ₱ gro $4.50, 10%
Gold Medal ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel.. ₱ gro
Yates' Liquid, 3 5 10 gal....
₱ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 12½¢
Jet Black ..... ₱ gro $3.50
Japanese ..... ₱ gro $3.50
Fireside ..... ₱ gro $2.50
Diamond O. K. Enamel ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish. ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00

Poppers, Corn—
Round or Square, 1 qt. ₱ gr $10.00@10.50
Round or Square, 1½ qt. ₱ gr $15@15.50
Round or Square, 2 qt. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.

Glue—
Tinned 40%
Enameled ..... 40&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Presses.

Fruit and Jelly—
Enterprise Mfg. Co ..... 20&10@30%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%
Silver & Co ..... ₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.

Nail.
Curtiss Hammer ..... ₱ doz $9.00
Giant, No. 1 ..... ₱ doz. $13.00, 10%
Giant, No. 2 ..... ₱ doz, $15.00, 10%
Pelican ..... ₱ doz, $9.00, 25%

Pullevs—
Hot House, Awning, &c ..... 60&10%
Japanned Screw ..... 60&10%
Brass Screw ..... 60&10%
Japanned Slide ..... 60%&10%
Japanned Clothes Line ..... 60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Shade Rack 45%
Tackle Blocks ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00 ..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper Goods. 70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz ..... 60@65¢
Bemis & Call Co.'s Cast Steel Drive. .50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality .... ₱ doz $2.50@2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Check .. 40%
Solid Tinners', P.S. & W. Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P.S. & W. Co. 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—

	Small.	Med.	Large.
Sliding Door, Wr't Brass, ₱ ℔ 35¢			15%
Sliding Door, Bronzed Wr't Iron. ₱ ft. 7¢			
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%			
Barn Door Light. In.	½	¾	¾
Per 100 feet	$2.00	2.50	3.10, 10%

B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.15	2.70	3.25. net

Terry's Steel Rail, ₱ foot ..... 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier Steel Rail, ₱ foot ..... 4½¢
Moore's Wrought Iron 25%

Rakes—
Cast Steel, Association goods ..66⅔@70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable ..... 70@70&5%
Gibbs Lawn Rake ..... $12.00, 50&15
Canton Lawn Rake ..... $9.00, 50&10
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAA1, list Nov. 1, 1889 ..... 50%
Jordan's Old Faithful, list Nov. 1, '89. 50%
Electric ..... List net

Razor Strops—See Strops, Razor.

Rings and Ringers.

Bull Rings—
Union Nut Co 55%
Sargent's ..... 60%&10@70&5%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s. ..... 70&10%
Peck, Stow & W. Co's. .50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers. ..... ₱ doz $2.00
Top of the Hill Rings ..... ₱ doz $1.25
Hill's Improved Ringers ..... ₱ doz $1.25
Hill's Old Style Ringers.... ₱ doz $1.12½
Hill's Tongs ..... ₱ doz $3.00
Hill's Rings ..... ₱ doz bxs $1.00
Perfect Rings ..... ₱ doz bxs $1.50
Perfect Ringers ..... ₱ doz $2.15@2.25
Blair's Hog Ringers ..... ₱ doz $2.00
Blair's Hog Rings ..... ₱ doz 90¢@$1.00
Champion Ringers ..... ₱ doz $2.00
Champion Rings, Double ..... ₱ doz $2.25
Brown's Rings ..... ₱ doz $2.00
Brown's Rings ..... ₱ doz $1.15@1.25

Rivets and Burrs—
Iron, list Nov. 17, '87 ..... 40%
Copper ..... 50@50&10%
Coppered Iron, Belting Brand 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—
Barn Door, Sargent's list ..... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller 70%

Rope—*See Trade Report.*

Manila	½ in. and larger	₱ ℔ 11¾¢
Manila	⅜ in.	₱ ℔ 12¼¢
Manila	¼ and 5-16 in.	₱ ℔ 13¼¢
Manila Tarred Rope		₱ ℔ 11 ¢
Manila, Hay Rope		℔ 11¼¢
Sisal	½ inch and larger	₱ ℔ 8 ¢
Sisal	⅜ in.	₱ ℔ 8½¢
Sisal	¼ and 5-16 in.	₱ ℔ 8¾¢
Sisal, Hay Rope		₱ ℔ 8 ¢
Sisal, Tarred Rope		₱ ℔ 7½¢
Sisal, Medium Lathe Yarn		₱ ℔ 7 ¢
New Zealand	½ in. and larger	₱ ℔ 7¾¢
New Zealand	⅜ inch	₱ ℔ 8¼¢
New Zealand	¼ and 5-16 inch,	₱ ℔ 9¼¢
New Zealand, Hay Rope		₱ ℔ 7¾¢
New Zealand, Tarred Rope		₱ ℔ 7½¢

Note.—Manufacturers' prices on above ¾¢ ₱ ℔ less, f. o. b. factory.

Cotton Rope ..... ₱ ℔ 15@18¢ net
Jute Rope ..... ₱ ℔ 6½@6¾¢

Wire—
List May 1, 1886.
Iron ..... 32½&2½%
Iron, Galvanized ..... 40&2½%
Cast Steel ..... 40&2½%

Rules—
Boxwood ..... 80&10&10@80&10&10&10%
Ivory ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel ..... .25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery.

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular 45%
Disston's Cross Cuts 45%
Disston's Hand 20%
Woodrough & McFarlin.
Hand, Panel and Rip 25%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ foot ..... 40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip 30%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 31¢
One Man Champion Cross Cuts, ₱ ft. 40¢

Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 32¢
Atkins' Champion and Electric Tooth X Cuts ₱ foot 30¢
Atkins' Hollow Back X Cuts. ₱ foot 20¢
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill 45%
Peace Hand Panel and Rip 25%
Peace Cross Cuts 45%
Richardson's Circular and Mill 45%
Richardson's X Cuts 45%
Richardson's Hand, &c. 25%
C. E. Jennings & Co., Hand, Panel and Rip 25%

Hack Saws—

Griffin's, complete. 40&10@50%
Griffin's Hack Saw, Blades 40&10@50%
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cabinet Makers', $15 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161 ₱ doz $6.75@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 30@30&10%
Riehle Bros.' Platform 40%

Scale Beams—See Beams, Scale

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50 30&10%
Box, 1 Handle ₱ doz $4.00. 10%
Box, 2 Handle ₱ doz $6.00, 10%
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ₱ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₱ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 75@75&10%
Bed 25&5%
Hand Rail, Sargent's 66⅔&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%
Jack Screws, Millers Falls list. 50@50&5%
Jack Screws, P. S. & W 35%
Jack Screws, Sargent 60&10@60&10&5%
Jack Screws Stearns' 40@40&10%

Cork—

Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Howe Bros & Hulbert 35%

Machine—

Flat Head, Iron 55%
Round Head, Iron 50%

Wood—

List March 1, 1889.
Flat Head Iron 50%
Round Head Iron 40%
Flat Head Brass 45%
Round Head Brass 35%
Flat Head Bronze 45%
Round Head Bronze 35%
Extra 10 @ 10&5 % often given.
Rogers' Drive Screws 66⅔%

Scroll Saws—See Saws, Scroll.

Scythe Snaths—See Snaths, Scythe.

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9. 25@25&10%
Miller's Falls Adj. Tool Hdls. Nos. 1, $12. 2, $18 25%
Henry's Combination Haft ₱ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50 70&10&5%
Stanley's Excelsior; No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%

Nail—

Square ₱ gr., $4.00@$4.25
Round ₱ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point ₱ gr., $12, 20%

Rivet.

Regular list 50&10%

Saw—

Stillman's Genuine ₱ doz $5.00@7.75, 40&5%
Stillman's Imita ₱ doz $3.25@5.25, 40&5@40&10%
Common Lever ₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00. 40&10@50%
Leach's No. 0, $8.00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine $13.00, 50&10%
Aiken's Imitation $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold 40&10@50%
Atkin's Lever ₱ doz No. 1, $6.00
Atkin's Criterion ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10%
Avery's Saw Set and Punch 50%
Chieftain H. R. Co.'s Superior ₱ doz $15, 50%

Sharpeners, Knife.

Parkin s.
Applewood Handles ₱ doz $6.00, 40%
Rosewood or Cocobolo ₱ doz $9.00, 40%

Shaves, Spoke.

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%

Shears—

American (Cast) Iron 75&10@75&10&5%
Barnard's Lamp Trimmers ₱ doz $3.75
Tinners' 20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears 33⅓%
First quality C. S. Trimmers 80@80&10%
Second quality C. S. Trimmers. 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Chicago Drop Forge & F. Co., Solid Steel Forged 60%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list. 60%
Electric List net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw ₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools 40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@ 4.50 net
Wheeler, M. & C. Co.'s Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co. 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888 50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E. list Dec. 18, 1885 60&10&2%
Sargent's list 60&10%
Reading list 60&10&10%

Ship Tools—

L. & I. J. White 20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, at factory, $4.00

Mule—

Add $1 ₱ keg to above prices.

Ox, Wrought—

Ton lots ₱ ℔ 9¢
1000 ℔ lots ₱ ℔ 9½¢
500 ℔ lots ₱ ℔ 10¢

Shot—

(Eastern prices 2¢ off, cash, 5 days.

Drop, ₱ bag, 25 ℔ $1.36
Drop, ₱ bag, 5 ℔ .32
Buck and Chilled, ₱ 25-℔ bag 1.61
Buck and Chilled, ₱ 5-℔ bag .37
(See Trade Report.)

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
Payne Pettebone & Son 33⅓&5%
Remington's (Lowman's Pat.) 30&10@40%
Rowland's, Black Iron 50&10%
Rowland's Steel 60&5@60&10%

Shovels and Tongs—

Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves—

Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co. 50&25%
Shaker (Barler's Pat.) Flour Sifters. ₱ doz $2.00; ₱ gr $21.60
Electric ₱ gr $21.00
A. & W. Sifters ₱ doz 2.00
Hunter's ₱ doz $2.00
Smith's Adjustable Sifters ₱ doz $2.00
Smith's Adjustable Milk Strainer. ₱ doz $2.00
Smith's Adjustable T. & C Strainer. ₱ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₱ doz..	80¢	$1.00
Mesh 20, Nested, ₱ doz..	95¢	1.10
Mesh 24, Nested, ₱ doz..	$1.15	1.25

Skeins, Thimble—

Western list 75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case 50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) 50&10%
Horchkiss 10%
Andrews 50%
Sargent's Patent Guarded 70&10&10%
German, new list 40&10%
Covert 50&2%
Covert, New Patent 50&5&2%
Covert, New R. E. 60&2%
Covered Spring 60&10&10%

Snaths, Scythe.

List 50&10@50&10&5%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list 70&10%
Buffalo S. S. & Co. 33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers 40&15%
C. Rogers & Bros. 40&15%
Rogers & Bro. 40&15%
Reed & Barton 40@40&5%
Wm. Rogers Mfg. Co. 40,15&5%
Simpson, Hall, Miller & Co. 40, 15&5%
Holmes & Edwards Silver Co. 40, 15&5%
L. Boardman & Son 50@12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver 50&10&5%
No. 30 Silver Metal 50&10&5%
No. 24 German Silver 50&10&5%
No. 50 Nickel Silver 50&5%
No. 49 Nickel Silver 50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal 50, 10&5%
18% Rogers' German Silver 60&5%
22% Rogers' Nickel Silver. 50&5%
German Silver 50@50&5
German Silver, Hall & Elton 50&5% cash
Nickel Silver 50&5@50&10&5% cash
Britannia 60%
Boardman's N'ck'l Silver. 40&7½&5% cash
Boardman's Britannia Spoons, case lots 50&12½&5% cash

Springs—

Door.—

Torrey's Rod, regular size ₱ doz $1.30
Gray's, ₱ gr., $20.00 20%
Bee Rod ₱ gr., $20.00 20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30 40&10@50%
Gem (Coil), list April 19, 1886 10%
Star (Coil), list April 19, 1886 20%
Victor (Coil) 60@60&10%
Champion (Coil) 60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's No. 1, ₱ doz, $18.00; No. 2, $15.00 50%
Rubber, complete, ₱ doz, $4.50 55&10%
Hercules 50%
Shaw Door Check and Spring 25@30@35%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Bait Scroll 60&10&10%
Cliff's Bolster Springs 25%

Squares—

Steel and Iron, Nickel-Plated.. } 80 &10%
Try Square and T Bevels 60&10@60&10 &10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's ₱ doz $2.00
Blair's "Climax" ₱ doz $1.25

Lemon—

Porcelain Lined, No. 1 ₱ doz $6.00, 25&30%
Wood, No. 2 ₱ doz $3.00, 35%
Wood, Common ₱ doz $1.70@1.75
Dunlap's Improved ₱ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz 25&10%
Jennings' Star ₱ doz $2.50
The Boss ₱ doz $2.50
Dean's Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant 50@50&5%
King 40&5%
Hotchkiss Straight Flash ₱ doz $12.00
Silver & Co., Glass ₱ gro. $9.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger ₱ ℔ 7@7½¢
Barbed, ⅜ in. ₱ ℔ 8@8½¢
Fence Staples, Galvanized, } Same price
Fence Staples, Plain } as B'rb Wire. See Trd. Rep.

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods 40@40&10%
Butterfield's Goods 40@40&10%
Lightning Screw Plate 25@30%
Reece's New Screw Plates 33⅓&5@40%
Reversible Ratchet 30 %
Gardner 25%

Stops, Bench.

Morrill's ₱ doz $9, 50%
Hotchkiss's ₱ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's ₱ doz $3. 10%
Cincinnati 25&10%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone ₱ ℔ 2½¢
Washita Stone, Extra ₱ ℔ 20@21¢
Washita Stone, No. 1 ₱ ℔ 15&16¢
Washita Stone, No. 2 ₱ ℔ 11&12¢
Washita Slips, No. 1, Extra ₱ ℔ 37@40¢
Washita Slips, No. 1 ₱ ℔ 25@26¢
Arkansas Stone, No. 1, 4 to 6 in ₱ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in ₱ ℔ $1.85
Turkey Oil Stone, 4 to 8 in ₱ ℔ 40¢
Turkey Slips ₱ ℔ $1.00@1.50
Lake Superior, Chase ₱ ℔ 16¢
Lake Superior Slips, Chase ₱ ℔ 31@32¢
Seneca Stone, Red Paper Brand ₱ ℔ 18@20¢
Seneca Stone, High Rounds ₱ ℔ 20&25¢
Seneca Stone, Small Whets ₱ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished ₱ doz $2.25
Cast Iron, Steel Points ₱ doz 80¢
Socket ₱ doz $1.75
Bullard's 25@25&10%

Strops, Razor—

Genuine Emerson 60@60&5%
Imitation " ₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com ₱ doz $2.00
Lamont Combination ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ doz $20, 50&50&5%
Perry ₱ doz, No. 1, $15.00; No. 0, $21.00 50&5@50&10%
Draw Cut No. 4, each $30.00 20%
Enterprise Mfg. Co. 20&10@30%
Silver's 40&10%

Sweepers, Carpet.

Bissell No. 5 ₱ doz $17.00
Bissell No. 7 New Drop Pan ₱ doz $19.00
Bissell, Grand ₱ doz $36.00
Grand Rapids ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ₱ doz $14.00
Jewel ₱ doz $17.00
Improved Parlor Queen, Nickeled ₱ doz $27.00
Japanned ₱ doz $24.00
Excelsior ₱ doz $22.00
Garland ₱ doz $18.00
Parlor Queen ₱ doz $24.00
Housewife's Delight ₱ doz $15.00
Queen ₱ doz $16.00
Queen, with band ₱ doz $18.00
King ₱ doz $30.00
Weed, Improved ₱ doz $18.00
Hub ₱ doz $16.00
Cog-Wheel ₱ doz $16.00
Conqueror ₱ doz $22.00
Easy ₱ doz $22.00
Monarch ₱ doz $22.00
Goshen ₱ doz $21.00

Tacks, Brads, &c.—

List Oct. 19, 1889. Standard Weights.

Carpet Tacks—
American Iron, Blued 77½%
Am'ican Iron, Tin'd or Cop'd. 77½%
Steel, Plain or Bright 75%
Steel, Tinned or Coppered 75%
Swedes Iron, Blued 75%
Swedes Iron, Tinned or Cop'd 75%
American Iron Cut Tacks 75%
Swedes Ir. Uphol'rs' Tacks, Blued. 75%
Swedes Iron Upholsterers' Tacks, Tinned 77½%
Gimp and Lace Tacks, Blued 75%
Gimp and Lace Tacks, Tinned. 77½%
Swedes Iron Basket or Trimmers' Tacks 70&10%
Miners' Tacks 77½%
Bill-Posters' or Railroad Tacks. 75%
Bill-Posters' or Railroad Tacks, Tinned 77½%
Copper Tacks 40%
Copper Finish. & Trunk Nails. 40%
Cigar Box Nails 60%
Zinc Glaziers' Points 50%
Picture-Frame Points 50%
Locking-Glass Tacks 50%
Brush Tacks 60%
Tin-Capped Trunk Nails 60%
Finishing Nails 70%
Trunk and Clout Nails, Black and Tinned 72½%
Common and Patent Brads 70%
Hungarian Nails 70%
Basket and Chair Nails 65%
Leathered Carpet Tacks 40%

Miscellaneous—

Double-Pointed, 120 count 85&10%
Wire Carpet Nails 50&10%
Plymouth Rock Steel Carpet Tacks. 25%

Extra 10 @ 10&10 %

Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Ehaves, Cincinnati Tool Co.....20%

Lumber.

Ring Peavies, "Blue Line"....₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mail. Iron Socket Peavies....₩ doz $19.00
Cant Hooks, "Blue Line"...₩ doz $16.00
Cant Hooks, Common Finish..₩doz$14.00
Cant Hooks, Mail. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mail. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $18.00

Saw.

Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15%
Mouse, Bonanza.....₩doz $0.90@$1.00
Mouse, Delusion.....₩ $1.00@$1.25
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—

Butter and cheese.....25%

Trimmers, Spoke.

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering. 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	26¢	34¢
No. 12, ¼ and ⅛ ℔ Balls	25¢	33¢
No. 18, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 24, ¼ and ⅛ ℔ Balls	22¢	32¢
No. 36, ¼ and ⅛ ℔ Balls	20¢	31¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....18½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@63½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—

Solid Box.....50&10@50&10&5%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Frentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%

Miscellaneous.

Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground.....55&5@60&5%
Unground.....65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles.....60&10&5%
Boilers and Saucepans.....40%
Tinned Boilers and Saucepans.....40%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11¼ in.....		4.00
Cuspidors.....		8.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure..... See also Pails.	3.50	

Indurated Fiber—25%

Spittoons, No. 2, ₩ doz.....$9.00
Basins, Ringed, ₩ doz., No. 2, $4.80; No. 3.....$4.20
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$2.25
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces) ₩ set.....$3.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₩ set.....$3.00
See also *Pails.*

Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5%

Hartford Silver Plate Co.....
William Rogers Mfg. Co.....
} 40&5&5%

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	5	2.9	2.65¢

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-b boxes 1¢ to list.

Wedges—

Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Weights, Sash—

Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.

8 in., $2.25; 10 in., $2.70; 12 in., $3.35

Wire and Wire Goods—

Iron—

Market,
Br. & Ann., Nos. 0 to 18.....75%
Cop'd, Nos. 0 to 18.....72½%
Galv., Nos. 0 to 18.....65%
Tin'd, Tinned list Nos. 0 to 18.....65%
Stone,
Br. and Ann'd, Nos. 16 to 18.....75%
Bright and Ann'd, Nos. 19 to 26.....77½%
Br. and Ann'd, Nos. 27 to 36.....80%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔...5½¢
Galvanized Fence, Nos. 8 and 9.....67½%
Annealed Fence, Nos. 8 and 9.....77½%
Annealed Grape, Nos. 10 to 14.....77½%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Annealed Wire on Spools.....50%
Malin's Steel and Tin'd on Spools.....50%
Malin's Brass and Cop. on Spools.....40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 ₩ £, 30¢
Steel Music Wire, 12 to 30...60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord, see cord.

Bright Wire Goods—

Standard list.....85%

Wire Cloth and Netting.

Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.40 @ $1.45
Galvanized Wire Netting.....70&10@75%

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&3%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard..70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
} 75& 5 @ 75 &10

Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

List September 20, 1890, 2% cash.

Wrought Goods—

Staples, Hooks, &c., list Jan. 12, 1886, 80&15@55%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	58	@	62
Linseed, City, boiled.....	61	@	65
Linseed, Western, raw.....	52	@	54
Lard, City, Extra Winter..	52	@	53
Lard, City, Prime.....	48	@	49
Lard, City, Extra No. 1.....	45	@	46
Lard, City, No. 1.....	42	@	43
Lard, Western, prime.....	..	@	48
Cotton-seed, Crude, prime.	23	@	25
Cotton-seed, Crude, off grades.....	18	@	22
Cotton-seed, Summer Yellow, prime.....	..	@	34
Cottonseed, Summer Yellow, off grades.....	27½	@	30
Sperm, Crude.....	70	@	71
Sperm, Natural Spring.....	69	@	71
Sperm, Bleached Spring....	74	@	76
Sperm, Natural Winter....	75	@	77
Sperm, Bleached Winter...	80	@	82
Whale, Crude.....	..	@	..
Whale, Natural Winter.....	..	@	53
Whale, Bleached Winter....	..	@	55
Whale, Extra Bleached.....	..	@	58
Sea Elephant, Bleached Winter.....	..	@	62
Menhaden, Crude, Sound...	23	@	25
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	26	@	27
Menhaden, Bleached W'ter.	31	@	32
Menhaden, Extra Bleached	35	@	..
Tallow, City, prime.....	..	@	44
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	7¾	@	8
Cocoanut, Cochin.....	..	@	8¾
Cod, Domestic.....	31	@	32
Cod, Foreign.....	33	@	34
Red Elaine.....	31	@	34
Red Saponified..... ₩ ℔	4½	@	4¾
Bank.....per gal	24	@	..
Straits.....	25	@	..
Olive, Italian, bbls.....	68	@	72
Neatsfoot, prime.....	62½	@	75
Palm, prime, Lagos....₩ ℔	6½	@	6¾

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	8½	@	9
Black, 29 gravity, 15 cold test.....	9	@	9½
Black, 29 gravity, summer.	7	@	8
Cylinder, light, filtered.....	15	@	20
Cylinder, dark, filtered ..	14	@	20
Cylinder, dard, at'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	12½	@	13
Paraffine, 25 gravity.....	11½	@	12
Paraffine, 28 gravity.....	10½	@	11
Paraffine, red, 21 @ 22 gr'ty	..	@	14½
Paraffine, red, 22½@23 gr'ty	12½	@	13

Paints and Colors.

Barytes, Prime White..... ₩ ton.	$21.00	@	$22.50
Barytes, Amer. refined...20.00	@	....	
Barytes, Amer. No. 1....18.00	@	....	
Barytes, Amer. No. 2....16.00	@	....	
Barytes, Amer., off-color.13.00	@	15.00	
Blue, Celestial.....₩ ℔	6	@	8
Blue, Chinese	50	@	55
Blue, Prussian.....	25	@	40
Blue, Ultramarine	10	@	30
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Black, American Drop....	8	@	10
Black, English Drop.....	12	@	14
Black, Frankfort, Drop....	5	@	18
Black, Lamp, common...	12	@	18
Black, Lamp, medium....	19	@	25
Black, Lamp, prime.....	27	@	33
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels.....	3.20	@	..
Carmine, No. 40, in bounce bottles.....	4.20	@	..
Chalk, in bulk.....₩ ton.	2.40	@	2.50
Chalk, in bbls..₩ 100 ℔.	30	@	35
China Clay, English..... ₩ ton.	12.00	@	18.00
Cobalt Oxide, prep'd....	2.90	@	....
Cobalt Oxide, black..... lots 100℔.	2.60	@	....
Cobalt, Oxide, black..... less 100℔.	2.65	@	....
Green, Paris, in bulk.....	14	@	14½
Green, Paris, 170 @ 175 ℔ kegs.....	14½	@	15
Green, Paris, small pack.	16	@	21
Green, Chrome, ordinary	8	@	13
Green, Chrome, pure...	22	@	25
Lead, Eng., B.B. white....	9	@	10

Lead, Amn. White, dry or in oil:
Kegs, lots less than 1000 ℔... @ 7¾
Kegs, lots 1000 ℔ to 5 tons @ 7¼
Kegs, lots 5 tons to 12 tons.. @ 7⅛
Kegs, lots 12 tons and over.. @ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... @ ⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price. @ 2½
Lead, Red, bbls. and ½ bbls.... 6¾ @ 7½
Lead, Red, kegs..... 7 @ 7¾
Litharge, kegs..... 7 @ 7¾
Litharge, bbls. and ½ bbls.... 6¾ @ 7½

TERMS, &C.—Lead and Litharge.—On lots of 1000 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed....	1½	@	2½
Ocher, German Washed...	1½	@	3
Ocher, American.....	½	@	1¼
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	9½	@	10
Orange Mineral, German ..	8½	@	9½
Orange Mineral, American..	8	@	8½
Paris White, English Cliff-stone.....	90	@	1.10
Paris White, American.....	70	@	80
Red, Indian, English.....	5½	@	7
Red, Indian, American....	2	@	6
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.35
Red, Venetian, English....	1.25	@	1.75
Sienna, Italian, Burnt and Powd.₩ ℔	5	@	6½
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½	@	1¾
Sienna, American, Burnt and Powdered.....	1½	@	1¾
Talc, French.....	1½	@	1¾
Talc, American.....	1	@	1¼
Terra Alba, Fr'ch. ₩ 100 ℔	72½	@	80
Terra Alba, English	80	@	85
Terra Alba, American No.1	70	@	75
Terra Alba, American No.2	38	@	40
Umber, Turkey, Bnt. and Powd.. ₩ ℔	3½	@	4
Umber, Turkey Bnt.Ln	2¾	@	3
Umber, Turkey, Raw and Powdered.....	3½	@	..
Umber Turkey, R'w Lmps	2½	@	2¾
Umber, Turkey, Bnt. Amer.	1¼	@	1¾
Umber, Turkey, R'w Amer.	1¼	@	1¾
Yellow, Chrome.....	10	@	25
Vermilion, Americ. Lead..	11½	@	13
Vermilion, Quicks'er, bulk.	..	@	75
Vermilion, Quicks'er, bags.	..	@	76
Vermilion, Quicksilver, smaller pkgs.....	..	@	80
Vermilion, English Import	82½	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½	@	90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₩ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry....₩ ℔	4½	@	5
Zinc, French, Red Seal.....	..	@	8½
Zinc, French, Green Seal..	..	@	8¾
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾	@	11¼
lots less than 1 ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over....	10	@	10¼
Lots of less than 1 ton....	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls, 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₩ ℔	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	13
Sienna, Burnt.....	7	@	13
Umber, Raw.....	7	@	10
Umber, Burnt	7	@	10

Spirits Turpentine.

In regular bbls	38	@	40¼
In machine bbls.....	38½	@	40¾

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	..
English.....	10	@	15
Irish.....	12	@	15

CURRENT METAL PRICES.

DECEMBER 31, 1890.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
⅝ to 2 in. round and square..	₩ lb 2.00 @ 2.10¢
1 to 6 in. x ⅝ to 1 in.....	
Refined Iron:	
⅝ to 2 in. round and square..	
1 to 4 in. x ⅝ to 1½ in.....	₩ lb 2.10 @ 2.30¢
4½ to 6 in. x ⅝ to 1 in	
1 to 6 in. x ¼ and 5-16	₩ lb 2.30 @ 2.50¢
Rods—⅝ and 11-16 round and sq..	₩ lb 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12.....	₩ lb 2.40 @ 2.60¢
"Burden Best" Iron, base price..	₩ lb..... 3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ lb..... 2.80¢
"Ulster".....	₩ lb..... 3.00¢
Norway Bars	4.00¢
Norway Shapes	5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.....₩ lb	3.00 @ 3.00¢	3.35 @	¢
17 to 20.....₩ lb	3.15 @ 3.25¢	3.35 @	3.75 ¢
21 to 24.....₩ lb	3.35 @ 3.35¢	3.60 @	¢
25 and 26....₩ lb	3.35 @	3.60 @	¢
27..... ...₩ lb	3.50 @ 3.62½¢	3.85 @	¢
28.....₩ lb	3.65 @ ... ..¢	4.10 @	¢
	B. B.		2d qual.
Galv'd, 14 to 20, ₩ lb,	4.75 @ ...	4.60 @	¢
Galv'd, 21 to 24, ₩ lb,	5.12 @ ...	5.00 @	¢
Galv'd, 25 to 26, ₩ lb,	5.50 @ ...	5.35 @	¢
Galv'd, 27..... ₩ lb,	5 90 @ ...	5.70 @	¢
Galv'd, 28..... ₩ lb,	6.25 @ ..	6.10 @	..¢
Patent Planished.....	₩ lb A 10¢		B. 9¢
Russia.....	₩ lb 10½¢ @		11¢
American Cold Rolled B. B.....	₩ lb 5¢ @		7¢
Craig Polished Sheet Steel.....	₩ lb, 8½¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.....	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic".....	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs.....	23 ¢
Straits, Pigs.....	22¼¢
Straits in Bars	25 ¢

Tin Plates.

	Charcoal Plates.—Bright.	Per box.
Melyn Grade.....	IC, 10 x 14.. .... @	$6.50
" "	IC, 12 x 12.. .... @	6.75
" "	IC, 14 x 20.. .... @	6.50
" "	IC, 20 x 28.. .... @	13 25
" "	IX, 10 x 14.. .... @	8.00
" "	IX, 12 x 12.. .... @	8 25
" "	IX, 14 x 20.. .... @	8.00
" "	IX, 20 x 28.. .... @	16.00
" "	DC, 12½ x 17.. .... @	6 00
" "	DX, 12½ x 17.. .... @	7.50
Calland Grade.....	IC, 10 x 14.. .... @	6.50
" "	IC, 12 x 12.. .... @	6.75
" "	IC, 14 x 20.. .... @	6.40
" "	IX, 10 x 14.. .... @	7.65
" "	IX, 12 x 12.. .... @	7.90
" "	IX 14 x 20.. .... @	7.65
Allaway Grade.....	IC, 10 x 14.. .... @	6.00
" "	IC, 12 x 12.. .... @	6.15
" "	IC, 14 x 20.. .... @	6.00
" "	IC, 20 x 28.. .... @	11.80
" "	IX, 10 x 14.. .... @	7.17
" "	IX, 12 x 12.. .... @	7.30
" "	IX, 14 x 20.. .... @	7.15
" "	IX, 20 x 28.. .... @	14.25
" "	DC, 12½ x 17.. ... @	5.65
" "	DX, 12½ x 17.. 6.00 @	6.65
	Coke Plates.—Bright.	
Steel Coke.—IC, 10 x 14, 14 x 20,.	@	$5.60
10 x 20..	@	7.75
20 x 28..	@	11.25
IX, 10 x 14, 14 x 20..	@	6.50
BV Grade.—IC, 10 x 14, 14 x 20.. ...	@	5.60
	Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20..	@	$5.40
20 x 28.	@	10.70
IX, 14 x 20.....	@	6.10
20 x 28.....	@	12.10
Abecarne Grade.—IC, 14 x 20....	@	5.10
20 x 28....	@	10.35
IX, 14 x 20....	@	6.10
20 x 28..	@	12 10

Tin Boiler Plates.

I XX, 14 x 26.....112 sheets.....	@ $13.50
I XX, 14 x 28..... 112 sheets....	@ 13.75
I XX, 14 x 31... ..112 sheets	@ 15 25

Copper.

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 3 ¢ ad valorem

Ingot.

Lake	@ 16½¢
Baltimore Grade...	@ 15 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	...
36	96		22	22	22	24	26	30	33	....
36		96	22	22	24	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	26	27	29	34	....	....
60		96	22	23	26	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Over 84 in. wide			25	27	...		...	...	...	...

All Bath Tub Sheets.....	16 oz.	14 oz.	12 oz.	10 oz.
Per pound.....	$0.27	0.29	0 31	0.35

Bolt Copper, ⅝ inch diameter and over, per pound..... 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot.....	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48, 14 x 52, 14 x 56, 14 x 60 in.	
14 and 16 oz. and heavier..33¢. By the case...32¢ ₩ lb	
12 oz. and lighter.....35¢. By the case...34¢ ₩ lb	
24 x 48 and 30 x 60.	
14 and 16 oz. and heavier..36¢. 12 oz.....39¢ ₩ lb	

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅝	½	⅜	¼	⅛	1	1⅛
8-14	6-12	39	35	32	31	30	29	26
15	13	40	35	33	32	31	30	27
16	14	41	36	34	33	32	31	27
17	15	42	37	35	32	33	32	28
18	16	44	38	36	34	33	32	29
19	17	45	39	37	36	35	34	31
20	18-19	46	41	39	38	37	36	33
21	20	48	43	41	40	39	38	36
22	21	50	44	42	41	40	39	38
23	22	52	46	44	43	42	41	41
24	23	55	48	46	45	43	42	43
25	24	58	51	48	47	46	45	47

Copper Bronze and Gilding Tube, 4¢ ₩ lb additional.

Brazed Brass Tubing (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	45¢ ₩ lb
Bronze Tubing, 8¢ ₩ lb more than Brass.	
Discount from list.....	25 @ ... %

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive...	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.24	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28.....	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive...	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Brass and Copper Wire.

Old English guage standard.	Com. high brass. Per lb.	Low brass. Per lb.	Gildi'g br'ze & copper Per lb.
All Nos. to No. 16, inclusive....	$0.22	$0 26	$0.30
No. 17 and No. 18.....	.23	.27	.31
No. 19 " " 20.....	.24	.28	.32
No. 21	.25	.29	.33
No. 22	.26	.30	.34
No. 23	.28	.32	.36
No. 24	.30	.34	.38
No. 25	.32	.36	.40
No. 26	.35	.39	.43
No. 27	.38	.42	.46
No. 28	.42	.46	.51
No. 29	.45	.49	.54
No. 30	.48	.52	.62
No. 31	.51	.55	.67
No. 32	.55	.59	.73
No. 33	.59	.63	.82
No. 34	.64	.68	.95
No. 35	.70	.74	1.30
No. 36	.76	.80	1.50
No. 37	1.00	1.04	1.70
No. 38	1.30	1.34	2.00
No. 39	2 00	2.00	3.25
No. 40	2.60	2.60	5.75

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	48¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No 10	54¢		

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6½ @ 6¾¢
"Bertha"	8¼¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks.....	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American	4¼¢ @ 4¾¢
Bar.....	5 ¢
Pipe, subject to trade discount.....	7½¢
Tin-Lined Pipe, subject to trade discount.....	15¢
Block Tin Pipes, subject to trade discount.....	40¢
Sheet, subject to trade discount.....	8¼¢

Solder.

½ @ ½ (Guaranteed)...	16 ¢
No. 1.....	13¢
Extra Wiping.....	11¾¢ @ 15¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson..... ₩ lb	20 @ 20½¢
Hallett's. ..... "	18½¢

ALUMINUM.

Prices in Ingots.

$2.00 ₩ lb in lots of 1000 lb and over.
$2.25 ₩ lb in lots of 500 lb and over.
$2.50 ₩ lb in lots of 100 lb and over.

For prices on Rolled Sheets, Tubing, Casting and Wire, see *The Iron Age*, December 11, 1890, page 1170.

Old Metals.

(Prices Paid in New York.)

Heavy Copper....	₩ lb 12 ¢
Light Copper...	₩ lb 11 ¢
Heavy Brass.....	₩ lb 10 ¢
Light Brass.....	₩ lb 8 ¢
Lead.....	₩ lb 4 ¢
Tea Lead.....	₩ lb 3½¢
Zinc.....	₩ lb 3 ¢
No. 1 Pewter.....	₩ lb 16 ¢
No. 2 Pewter	₩ lb 8 ¢
Wrought Scrap Iron.....	₩ gross ton $19.00
Heavy Cast Scrap.....	₩ gross ton 12.00
Stove Plate Scrap.....	₩ gross ton 8.00
Burnt Iron.....	₩ gross ton 6.00